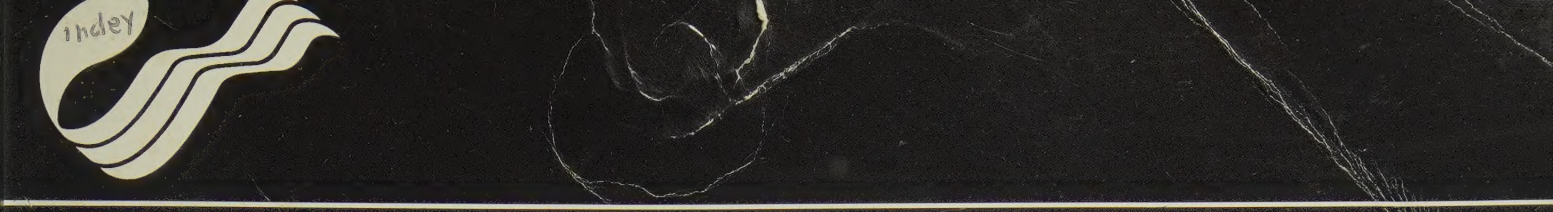

Canadian Journal of Fisheries and Aquatic Sciences

Journal canadien des sciences halieutiques et aquatiques

Fisheries and Oceans Pêches et Océans

Canada

The *Canadian Journal of Fisheries and Aquatic Sciences* has been published continuously since 1901, previously as *Contributions to Canadian Biology* 1901–25, *Contributions to Canadian Biology and Fisheries* 1926–34, *Journal of the Biological Board of Canada* 1934–37, and *Journal of the Fisheries Research Board of Canada* 1938–79.

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The *Journal* publishes original research articles, critical reviews, perspectives (essays of opinion or hypothesis), and comments. Papers may concern cells, organisms, populations, ecosystems, or processes that affect aquatic production systems, and they should lead to identifiable conclusions or syntheses, which variously may amplify, modify, question, or redirect accumulated knowledge embodied in contemporary perceptions of a particular state of fisheries and aquatic sciences. They should demonstrate clearly a contribution to knowledge beyond the confirmation state. Originality should relate to more than the particular (a certain year, place, taxon, or chemical compound) such that existing understanding is reformulated or extended.

It would assist the Editors if prospective authors identified briefly by covering letter (a) aspects of their papers that meet the foregoing objectives, (b) potential referees, and (c) other manuscripts contemplated or in press containing the same or similar information.

Submissions in English or French are acceptable. The information must be original, that is, not copyrighted, published, or submitted elsewhere except in abstract form or unless by written consent of the Editor. The *Journal* accepts no responsibility for statements made by contributors. The use of proprietary names does not imply endorsement of the product or company.

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Le *Journal* publie des articles fondés sur une recherche originale, des critiques, des essais portant sur une opinion ou une hypothèse (perspectives) et des commentaires. Les textes peuvent avoir trait aux cellules, aux organismes, aux populations, aux écosystèmes ou aux processus qui influent sur les systèmes de production aquatique. Ils doivent aboutir à des conclusions ou synthèses précises qui, de diverses façons, peuvent accroître, modifier, remettre en question ou réorienter le bagage actuel des connaissances et perceptions dans une discipline donnée des sciences aquatiques. Ils doivent clairement démontrer qu'ils contribuent aux connaissances en faisant plus que corroborer des faits. L'originalité doit dépasser le caractère particulier (une année, un endroit, un taxon ou un composé chimique donné) et tenir à une épuration ou à une reformulation des connaissances actuelles.

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PREFACE/PRÉFACE

In 1968, the Fisheries Research Board of Canada published Bulletin 164, a subject-author index and list of its publications to 1964. Miscellaneous Special Publication 18, covering the period 1965 to 1972, was published in 1973. Between 1973 and 1976, annual subject-author indexes and lists of publications were published as separate issues of the Journal.

Since 1977, the annual index has contained a subject index, an author index, and a list of publications. Entries in the subject index consist of an entry term, a number of modifying terms, if required, and a taxonomic or common name and a geographic term, if appropriate. Entry terms and, wherever possible, modifying terms are selected from the *Aquatic sciences and fisheries thesaurus*, ASFIS Reference Series No. 6. However, it is sometimes necessary to use modifying terms not found in the *Thesaurus* to convey adequately all concepts. The principal authority for taxonomic and common names for Canadian and American marine and freshwater fishes is *A list of common and scientific names of fishes from the United States and Canada* (5th ed., 1991), Special Publication No. 20 of the American Fisheries Society; for mollusks *Common and scientific names of aquatic invertebrates from the United States and Canada*, Special Publication No. 16 of the American Fisheries Society (1988), and for decapod crustaceans *Common and scientific names of aquatic invertebrates from the United States and Canada*, Special Publication No. 17 of the American Fisheries Society (1989). Where authors have used names or spellings not conforming to those recommended, entry terms for such names are included, referring to the recommended names under which documents are indexed.

En 1968, l'Office des recherches sur les pêcheries du Canada publiait le bulletin no 164 qui constituait un index des matières et des auteurs, ainsi qu'une liste de ses publications jusqu'à 1964. Le no 18 des Publications diverses spéciales, visant la période de 1965 à 1972, a paru en 1973. Entre 1973 et 1976, on a publié chaque année un index des matières et des auteurs ainsi qu'une liste des publications dans un numéro distinct du Journal.

Depuis 1977, l'index annuel comprend un répertoire des matières et des auteurs et une liste des publications. Les notices de l'index des matières sont composées d'un terme d'entrée, d'un certain nombre de termes modificatifs si nécessaire, ainsi que d'une désignation taxonomique ou d'une appellation courante et d'un terme géographique au besoin. Les termes d'entrée et, dans la mesure du possible, les termes modificatifs sont choisis d'après l'*Aquatic sciences and fisheries thesaurus, no 6* de la série de référence d'ASFIS. Cependant, il est parfois nécessaire d'utiliser des termes modificatifs qu'on ne trouve pas dans le *Thesaurus* pour exprimer convenablement tous les concepts. Le principal ouvrage qui fasse autorité en ce qui concerne les appellations communes et taxonomiques des espèces de poisson d'eaux douces et marines des États-Unis et du Canada est intitulé *A list of common and scientific names of fishes from the United States and Canada* (5e édition, 1991), Special Publication No. 20 de l'American Fisheries Society ; les mollusques sont traités dans *Common and scientific names of aquatic invertebrates from the United States and Canada*, Special Publication No. 16 de l'American Fisheries Society (1988) et les crustacés décapodes dans *Common and scientific names of aquatic invertebrates from the United States and Canada*, Special Publication No. 17 de l'American Fisheries Society (1989). Quand un auteur utilise des désignations ou un orthographe différents des formes recommandées, on inclut les termes d'entrée pour ces noms en renvoyant aux noms recommandés sous lesquels les documents sont indexés.

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ABBREVIATIONS

Publications

J - Canadian Journal of Fisheries and Aquatic Sciences

SP - Canadian Special Publication of Fisheries and Aquatic Sciences

B - Canadian Bulletin of Fisheries and Aquatic Sciences

AR - Annual Report

TF - Canadian Technical Report of Fisheries and Aquatic Sciences

MF - Canadian Manuscript Report of Fisheries and Aquatic Sciences

DF - Canadian Data Report of Fisheries and Aquatic Sciences

IF - Canadian Industry Report of Fisheries and Aquatic Sciences

TH - Canadian Technical Report of Hydrography and Ocean Sciences

DH - Canadian Data Report of Hydrography and Ocean Sciences

CH - Canadian Contractor Report of Hydrography and Ocean Sciences

TS - Canadian Translation of Fisheries and Aquatic Sciences

EC - Economic and Commercial Analysis Report

R. - Reprinted

Rev. - Revised

F. - French

Geographic abbreviations

Alta. - Alberta
B.C. - British Columbia
Man. - Manitoba
N.B. - New Brunswick
Nfld. - Newfoundland
N.S. - Nova Scotia
N.W.T. - Northwest Territories
Ont. - Ontario
P.E.I. - Prince Edward Island
Que. - Quebec
Sask. - Saskatchewan
Yuk. - Yukon Territory

The names of states in the United States of America are abbreviated according to the *CBE Style Manual*.

Atl. - Atlantic
I. - Island
L. - Lake
Pac. - Pacific
R. - River

Certain geographic areas have their major subdivisions designated by N(north), S(south), E(east), W(west), NW(northwest), NE(northeast), etc.

ABRÉVIATIONS

Publications

J - Journal canadien des sciences halieutiques et aquatiques

SP - Publication spéciale canadienne des sciences halieutiques et aquatiques

B - Bulletin canadien des sciences halieutiques et aquatiques

AR - Rapport annuel

TF - Rapport technique canadien des sciences halieutiques et aquatiques

MF - Rapport manuscrit canadien des sciences halieutiques et aquatiques

DF - Rapport statistique canadien des sciences halieutiques et aquatiques

IF - Rapport canadien à l'industrie sur les sciences halieutiques et aquatiques

TH - Rapport technique canadien sur l'hydrographie et les sciences océaniques

DH - Rapport statistique canadien sur l'hydrographie et les sciences océaniques

CH - Rapport canadien des entrepreneurs sur l'hydrographie et les sciences océaniques

TS - Traduction canadienne des sciences halieutiques et aquatiques

EC - Rapport de l'analyse économique et commerciale

R. - réimprimé

Rev. - révisé

F. - français

Abréviations de noms géographiques

Alta. - Alberta	N.W.T. - Territoires du Nord-Ouest
B.C. - Colombie-Britannique	Ont. - Ontario
Man. - Manitoba	P.E.I. - Île-du-Prince-Édouard
N.B. - Nouveau-Brunswick	Que. - Québec
Nfld. - Terre-Neuve	Sask. - Saskatchewan
N.S. - Nouvelle-Écosse	Yuk. - Territoire du Yukon

Les abréviations des noms des états des États-Unis sont tirées du *CBE Style Manual*.

Atl. - Atlantique	Pac. - Pacifique
I. - Île	R. - Rivière
L. - Lac	

Certaines régions géographiques ont leurs principales subdivisions indiquées de la façon suivante : N(nord), S(sud), E(est), W(ouest), NW(nord-ouest), NE(nord-est), etc.

LIST OF THE PRINCIPAL INDEX TERMS USED IN THE SUBJECT INDEX/ LISTE DES PRINCIPAUX TERMES UTILISÉS DANS L'INDEX DES MATIÈRES

To reduce the size of the subject index, some specific concepts have been grouped together under more general index terms; these are listed in capital letters below. Publications dealing with fecundity, for example, are to be found under Population Dynamics.

Pour réduire l'espace occupé par l'index des matières, certains concepts ont été groupés sous des termes plus généraux ; ceux-ci sont inscrits en lettres majuscules ci-dessous. Par exemple, les publications traitant de fécondité seront classées sous "Population Dynamics".

Abundance (*see* DISTRIBUTION AND ABUNDANCE)

AGE AND GROWTH (Age determination; growth patterns and rates)

Age composition (*see* POPULATION STRUCTURE)

Annual reports (*see* INFORMATION SERVICES)

AQUACULTURE (Freshwater; Marine; Hatcheries)

BEHAVIOR

Bibliographies (*see* INFORMATION SERVICES)

Biochemistry (*see* PHYSIOLOGY AND BIOCHEMISTRY)

BIOGEOGRAPHY

Check lists (*see* INFORMATION SERVICES)

Competition (*see* PREDATION AND COMPETITION)

COMPUTER PROGRAMS AND DATA PROCESSING

CONFERENCES (Symposia; Workshops)

CRUISES (Fishery; Plankton; Oceanographic)

Data processing (*see* COMPUTER PROGRAMS AND DATA PROCESSING)

DISEASES AND PARASITES

DISTRIBUTION AND ABUNDANCE (Geographical; Vertical; Horizontal)

ECONOMICS AND SOCIOLOGY

EGGS AND LARVAE

ENVIRONMENTAL EFFECTS (Effects of environmental conditions on organisms and fisheries)

ENVIRONMENTAL IMPACT (Effects of man-induced environmental changes on organisms and fisheries)

Equipment (*see* METHODOLOGY AND TECHNIQUES)

Fecundity (*see* POPULATION DYNAMICS)

FISH HANDLING (Aquatic products and their handling)

Fishery surveys (*see* FISHERIES AND FISHABLE STOCKS)

FISHERIES AND FISHABLE STOCKS (Statistics; Sampling, Stock assessment; Management; Gear; Surveys)

FISHES (general)

Fishery cruises (*see* CRUISES)

Fishery management (*see* FISHERIES AND FISHABLE STOCKS

FOOD AND FEEDING (including feeding behavior)

Gear (*see* FISHERIES AND FISHABLE STOCKS)

Genera, new (*see* NEW GENERA)

GENETICS (Hybrids, Ploidy; Population)

Growth (*see* AGE AND GROWTH)

HABITAT

Hatcheries (*see* AQUACULTURE)

HISTORICAL ACCOUNT

Hydrology (*see* OCEANOGRAPHY AND LIMNOLOGY)

INFORMATION SERVICES (Annual reports; Bibliographies; Check lists; Manuals)

INTRODUCED SPECIES

Limnology (*see* OCEANOGRAPHY AND LIMNOLOGY)

Manuals (*see* INFORMATION SERVICES)

METEOROLOGY

METHODOLOGY AND TECHNIQUES (Laboratory methods; Analysis; Equipment)

MIGRATIONS AND TAGGING (including migratory behavior)

MODELS (Mathematical; Analytical)

MORPHOMETRY AND TAXONOMY

Mortality (*see* POPULATION DYNAMICS)

NAVIGATION

NEW GENERA

NEW RECORDS

NEW SPECIES

Nutrients (*see* OCEANOGRAPHY AND LIMNOLOGY)

OCEANOGRAPHY AND LIMNOLOGY (Physical; Chemical; Biological; Hydrology; Nutrients)

Oceanographic cruises (*see* CRUISES)

Parasites (*see* DISEASES AND PARASITES)

PHYSIOLOGY AND BIOCHEMISTRY (including metabolism)

PLANKTON (Nanno-; Phyto-; Zoo-)

Plankton cruises (*see* CRUISES)

POLLUTION (Pollutants; Pollution monitoring)

POPULATION DYNAMICS (Dynamical characteristics; Recruitment; Fecundity; Spawning; Sexual maturity; Mortality)

Population genetics (*see* GENETICS)

POPULATION STRUCTURE (Structural characteristics; Age composition, Weight, Body size)

PREDATION AND COMPETITION (including interspecific and intraspecific relationships)

PRODUCTION (Primary; Secondary)

Records, new (*see* NEW RECORDS)

Recruitment (*see* POPULATION DYNAMICS)

REPRODUCTION (Biology)

RESEARCH INSTITUTIONS

Sampling (*see* FISHERIES AND FISHABLE STOCKS)

Sexual maturity (*see* POPULATION DYNAMICS)

Sociology (*see* ECONOMICS AND SOCIOLOGY)

Spawning (*see* POPULATION DYNAMICS)

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Tagging (*see* MIGRATIONS AND TAGGING)

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Acer saccharum (*see* MAPLE, SUGAR)

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(5) : 1027 (recruitment, population number, stream flow, Arctic grayling, Chena R.)
(9) : 1890 (habitat improvement, fertilizers, growth, Arctic grayling, Kuparuk R.)
(10) : 1994 (feeding behavior, dominance hierarchies, Arctic grayling, rivers)
: 1999 (feeding behavior, dominance hierarchies, models, Arctic grayling, rivers)
(12) : 2621 (life history, habitat, juveniles, chinook salmon, Situk R.)
DF 861 (fishery surveys, aerial photography, seining, evaluation, Arctic char, Dolly Varden, Firth R.)

ALBERTA (PROVINCE), CANADA
J 49(10) : 2128 (chemical limnology, stream flow, sediment composition, river beds, Pembina R.)

ALEWIFE (*Alosa pseudoharengus*) (gaspereau)
J 49(4) : 805 (feeding behavior, body size, ontogeny, Great Lakes, North America)
(9) : 1770 (stock identification, population genetics, Great Lakes, North America)
(10) : 2009 (feeding behavior, plankton feeders, *Bythotrephes cederstroemi*, L. Ontario)
MF 2136 (life history, population

characteristics, stock assessment, rivers, N.S.)

ALGAE (*see also* PLANKTON)
J 49(1) : 65 (acidification, buffers, paleontology, diatoms, Lysevatten L., Sweden)
: 116 (toxicity, aluminum, paleolimnology, Adirondack region, NY)
: 185 (acidification, herbivores, abundance, metaphyton, lakes, Ont.)
(6) : 1171 (trophic status, indicator species, models, diatoms, freshwater lakes, Canada)
(8) : 1641 (primary production, nutrients, correlation analysis, lakes, PA)
(9) : 1924 (distribution, mortality causes, *Chaetoceros convolutus*, *Chaetoceros concavicornis*, B.C.)
(11) : 2281 (phytoplankton, production, environmental effects, saline lakes, Humboldt L., Redberry L., Sask.)
: 2331 (chlorophylls, chemical extraction, chromatographic techniques)
(12) : 2507 (acidification, biomass, zooplankton, carbon)
: 2605 (chlorophylls, biomass, phosphorus, phytoplankton)
TF 1799 (conferences, algal blooms, toxicants, biological poisons, marine environment, Canada)
TH 135 (conferences, algal blooms, toxicity, environmental monitoring, B.C.)

Alosa aestivalis (*see* HERRING, BLUEBACK)
pseudoharengus (*see* ALEWIFE)
sapidissima (*see* SHAD, AMERICAN)

Ambloplites rupestris (*see* BASS, ROCK)

Ameiurus melas (*see* BULLHEAD, BLACK)

Ammodytes hexapterus (*see* SAND LANCE, PACIFIC)

AMPHIBIA
J 49(S1) : 114 (pollution effects, acidification, geographical distribution, ponds, Sudbury, Ont.)

AMPHIPODA
J 49(1) : 52 (pollution effects, acidification, survival, *Hyalella azteca*, lakes, Ont.)
(3) : 513 (hosts, sealworm, *Gammarus oceanicus*, ponds, Wallace L., Sable I., N.S.)
(11) : 2354 (habitat improvement, food webs, oligotrophic lakes, Saqvaqjuac, N.W.T.)
TF 1863 : 67 (indicator species, sediment pollution, heavy metals, *Gammarus fasciatus*, St. Lawrence R.)
: 222 (toxicity tests, sediments, marine environment, brackishwater environment, Canada Coasts)

ANCHOVETA, PERUVIAN (*Engraulis ringens*)
J 49(9) : 1762 (interspecific relationships, equatorial upwelling, resource depletion, pilchard, Peru)

ANCHOVY, NORTHERN (*Engraulis mordax*)
J 49(12) : 2515 (aerial surveys, stock assessment, data acquisition, models)

Anisakis simplex (*see* NEMATODA)

Anodonta grandis (*see* FLOATER, GIANT) (freshwater mussel)

Anoplopoma fimbria (*see* SABLEFISH)

Aplodinotus grunniens (*see* DRUM, FRESHWATER)

AQUACULTURE
J 49(2) : 229 (osmoregulation, photoperiods, light effects, Arctic char, Norway)
(9) : 1778 (selective breeding, body size, larvae, females, striped bass, SC)
(11) : 2260 (fish culture, fish handling, metabolism, starvation, rainbow trout)
: 2373 (crab culture, disease control, bacteria, [swimming] crab, Japan)
: 2406 (fats, bioaccumulation, self purification, channel catfish)
(12) : 2469 (growth, diets, putrescine, rainbow trout)
SP 116 (diseases, disease control, cage culture, Salmonidae, B.C., WA)
TF 1785 (aquaculture techniques, polyploids, coho salmon)
1831 (aquaculture development, aquaculture techniques, economics, conferences, Salmonidae, World Waters)
: 1 (aquaculture development, historical account, potential yield, Atlantic salmon, Norway)
: 9 (aquaculture development, economics, historical account, Atlantic salmon, Scotland)
: 21 (aquaculture development, temperature effects, historical account, Atlantic salmon, Atl. Canada, ME)
: 37 (aquaculture development, potential yield, historical account, Salmonidae, B.C.)
: 51 (aquaculture development, economics, historical account, Salmonidae, Chile)
: 65 (aquaculture development, potential yield, historical account, Salmonidae, Tasmania, Australia)
: 75 (aquaculture enterprises, disease detection, fishery protection, natural populations,

Salmonidae, Canada)
: 85 (aquaculture techniques, selective breeding, economics, Atlantic salmon)
: 93 (aquaculture techniques, selective breeding, Salmonidae, Norway)
: 107 (aquaculture techniques, food consumption, nutritional requirements, Salmonidae)
: 125 (aquaculture techniques, nutritional requirements, fish meal, economics, Salmonidae)
: 133 (aquaculture techniques, rearing, smolts, Salmonidae)
: 141 (aquaculture techniques, growth regulators, proteins, peptides, Salmonidae)
: 153 (aquaculture products, marketing, economics, Salmonidae, USA, Japan)
1832 (conferences, biology, striped bass, Scotia-Fundy Region, NW Atl.)
1841 (fish culture, production, abundance, zooplankton, walleye, Methley Beach, Dauphin L., Man.)
1842 (production, colonization, hatcheries, coho salmon, Grant L., B.C.)
1855 (aquaculture techniques, environmental conditions, survival, Atlantic salmon, Saint John R., N.B., LaHave R., N.S.)
1882 (economic analysis, shellfish closures, bacterial diseases, Mollusca, P.E.I.)
IF 211 (research programs, reproduction, Arctic char, Atl. Canada)
212 (conferences, research programs, technology transfer, Arctic char, Nfld.)
DH 115 (aquaculture facilities, water temperature, salinity, Atlantic salmon, L'Etang Inlet, N.B.)
TS 5556 (aquaculture industry, aquaculture techniques, market research, Norway)
5561 (fishways, hydraulic structures, baffles, France)
5566 (biological data, hatcheries, Atlantic salmon, Lower Luven'ga R., Russia)
5568 (prawn culture, nutritional requirements, lipids, fleshy prawn, Rep. China)
5569 (metabolism, fatty acids, Cyprinidae, Rep. China)
5570 (prawn culture, fish culture, nutritional requirements, lipids, Rep. China)
5574 (age, sperm, rainbow trout)
5576 (prawn culture, feeding experiments, digestibility, fleshy prawn)
5579 (economics, marketing, Atlantic cod, Norway)
EC 33 (economics, marketing, Atlantic salmon, Maritime Provinces, Nfld.)

AQUATIC BIRDS
J 49(S1) : 122 (habitat selection, breeding sites, acidification, lakes, Sudbury, Ont.)

AQUATIC INSECTS
J 49(9) : 1778 (environmental effects, river discharge, species composition, population density, Man.)
(10) : 2141 (pollution indicators, trace elements, rivers)

AQUATIC ORGANISMS
J 49(6) : 1142 (metabolism, measurement, respirometers, invertebrates)
TF 1821 (videotape recordings, underwater visibility, evaluation)
1863 : 299 (pollution, heavy metals, chlorine compounds, bioaccumulation, Que.)

AQUATIC PLANTS
J 49(5) : 992 (phytofauna, production, trophic structure, freshwater lakes, Que.)
(12) : 2483 (water currents, sediments, clays, models, L. Memphremagog, Que.)
TF 1863 : 169 (toxicity tests, environmental monitoring, methodology)

ARCTIC
J 49(3) : 462 (deep diving, radio telemetry, white whale)
: 565 (feeding behavior, vertical distribution, pelagic environment, Aesop shrimp, Resolution I., E Hudson Strait)
(5) : 842 (echo surveys, geographical distribution, vertical distribution, Aesop shrimp, Resolution I., Hudson Strait)
MF 2139 (fishery management, quota regulations, marine mammals, marine fishes)
DH 5(22) (chemical oceanography, chemical components, inventories, Northwest Passage)
32(4) (oil and gas industry, drilling fluids, hydrocarbons, inventories, Arctic Is.)
99 (water temperature, salinity, water density, Hudson Strait)

Arctocephalus pusillus pusillus (*see* SEAL, SOUTH AFRICAN FUR)

ARMORHEAD, SLENDER (*Pentaceros wheeleri*) (*Pseudopentaceros wheeleri*)
J 49(11) : 2386 (stock identification, DNA, polymers, seamounts, N Pac.)

Asterias rubens (*see* SEA STAR)

Aufwuchs (*see* PERIPHYTON)

AUSTRALIA
TF 1831 : 65 (aquaculture development, potential yield, historical account, Salmonidae, Tasmania)

B

BACTERIA
J 49(9) : 1916 (decomposition, pollution effects, acidification, sugar maple, Adirondack region, NY)
(11) : 2373 (crab culture, disease control, [swimming] crab, Japan)
: 2412 (heterotrophic organisms, environmental factors, abundance, rivers, Ont.)
TF 1768 (analysis, fishery products, food composition, *Escherichia coli*)

BALTIC SEA
J 49(1) : 73 (feeding behavior, prey selection, zooplankton, Atlantic herring)
: 166 (pollution effects, pulp wastes, disease, skull, northern pike, Gulf of Bothnia)
(4) : 644 (sexual maturity, spawning populations, nutrition, Baltic herring, Archipelago Sea)
(10) : 2104 (mesh selectivity, trawling, evaluation, Atlantic herring)
TS 5580(2) (population characteristics, seasonal variations, migrations, Atlantic herring, sprat)

BASS, LARGEMOUTH (*Micropterus salmoides*)
J 49(6) : 1189 (osmoregulation, acidification, aluminum, mortality)

BASS, ROCK (*Ambloplites rupestris*)
J 49(8) : 1714 (trophic relationships, predation, crayfish, MO)

BASS, SMALLMOUTH (*Micropterus dolomieu*)
J 49(8) : 1714 (trophic relationships, predation, crayfish, MO)
(S1) : 87 (pollution effects, sulphur dioxide, sport fishing, Sudbury, Ont.)

BASS, STRIPED (*Morone saxatilis*)
J 49(7) : 1439 (growth, back calculation, otoliths, larvae)
(9) : 1778 (selective breeding, body size, larvae, females, SC)
TF 1832 (conferences, aquaculture, biology, Scotia-Fundy Region, NW Atl.)

BEAUFORT SEA; BEAUFORT SEA SHELF
J 49(4) : 663 (zooplankton, check lists, sediment traps, winter)
MF 2125 (tagging, migrations, sonic tags, Arctic cisco, SE Beaufort Sea)
DF 857 (chemical oceanography, chlorophylls, nutrients)
TH 139 (ice thickness, snow, radar, Beaufort Sea Shelf)
DH 5(20:1) (chemical oceanography, chemical components, inventories)
(20:2) (chemical oceanography, chemical components, inventories)
32(4) (oil and gas industry, drilling fluids, hydrocarbons, inventories)
60(8) (sediment sampling, sediment traps, chemical analysis)
104 (oceanography, salinity, nutrients, water temperature)
112 (oceanographic data, nutrients, salinity, cruises)

BEHAVIOR
J 49(1) : 110 (swimming, bioenergetics, controlled conditions, Danube bleak, nase)
: 159 (avoidance reactions, predation, *Daphnia pulex*)
(2) : 259 (local movements, seasonal variations, body size, larvae, caddisflies)
(3) : 448 (rheotaxis, osmoregulation, annual variations, landlocked species, Arctic char)
: 453 (swimming, marine environment, telemetry, coho salmon, N Pac.)
: 462 (deep diving, radio telemetry, white whale, Arctic)
: 516 (overwintering, freezing, glycoproteins, juveniles, Atlantic cod)
: 523 (swimming, evaluation, stereocinematography, fishes)
(6) : 1176 (avoidance reactions, interspecific relationships, predation, northern pike, freshwater fishes, Bolger Bay, MI)
(7) : 1343 (behavioral responses, sound, geophysical surveys, rockfishes)
: 1357 (behavioral responses, sound, geophysical surveys, catch/effort, rockfishes, CA)
: 1478 (aggregations, habitat selection, migrations, coho salmon, Carnation Creek estuary, B.C.)
(8) : 1570 (activity patterns, feeding experiments, larvae, turbot, Atlantic cod)
(9) : 1843 (homing behavior, straying, coho salmon, Vancouver I., B.C.)
(10) : 1994 (social behavior, feeding behavior, dominance hierarchies, Arctic grayling, rivers, AK)
: 1999 (social behavior, feeding behavior, dominance hierarchies, models, Arctic grayling, rivers, AK)
: 2086 (orientation behavior, natural populations, sea scallop, Nfld.)
(12) : 2630 (avoidance reactions, predation, rainbow trout, *Paragnetina media, Agnetina capitata*)

Beluga (*Delphinapterus leucas*) (*see* WHALE, WHITE)

BENTHOS
J 49(1) : 91 (check lists, prey selection, juveniles, haddock, Browns Bank, NW Atl.)
(2) : 259 (local movements, seasonal variations, body size, larvae, caddisflies)
(6) : 1184 (taxonomy, pollution detection, macrobenthos, Puget Sound, WA)
(8) : 1686 (pollution effects, heavy metals, invertebrates, Clinch R., VA)
(9) : 1873 (islands, river meanders, invertebrates, Ohio R., KY)
MF 2127 (abundance, geographical distribution, check lists, molluscs, L. Winnipeg, Man.)
DH 114 (biological surveys, burrowing organisms, fjords, B.C.)

BERING SEA
J 49(2) : 319 (stock identification, DNA, cell organelles, walleye pollock)
(7) : 1366 (demersal fisheries, fishery data, trawling, models)
TS 5563 (parasites, lungs, taxonomy, new species, *Parafilaroides krascheninnikovi*, ringed seal)

Blackcod (*see* SABLEFISH)

Blackflies (*see* SIMULIIDAE)

BLEAK, DANUBE (*Chalcalburnus chalcoides mento*)
J 49(1) : 110 (bioenergetics, swimming, feeding behavior, controlled conditions)

BLOATER (*Coregonus hoyi*)
J 49(4) : 805 (feeding behavior, body size, ontogeny, Great Lakes, North America)
(9) : 1902 (stock identification, DNA, cell organelles, L. Superior, L. Ontario)

BLUEGILL (*Lepomis macrochirus*)
J 49(7) : 1466 (biomass, plankton feeders, primary production)

Bolbosoma porta (*see* ACANTHOCEPHALA)

BOLBOSOMA TUBERCULATA (Acanthocephala)
TS 5553 (new species, taxonomy, parasites, South Atlantic Ocean, Indian Ocean)

Bosmina longirostris (*see* CLADOCERA)

BOTHNIA, GULF OF
J 49(1) : 73 (feeding behavior, prey selection, zooplankton, Atlantic herring)

BRITISH COLUMBIA (PROVINCE), CANADA (*see also* NORTHEAST PACIFIC OCEAN)
J 49(1) : 99 (osmoregulation, population genetics, sympatric populations, kokanee, sockeye salmon, Shuswap L.)
(2) : 337 (limnology, detritus, dynamics, streams, Malcolm Knapp Research Forest)
: 358 (stock identification, DNA, geographical isolation, environmental impact, white sturgeon, Fraser R.)
(4) : 682 (habitat selection, habitat improvement, evaluation, coho salmon, cutthroat trout, Musqueam-Cutthroat Creek)
: 708 (length, abundance, migrations, models, Pacific hake, Vancouver I.)
: 743 (environmental effects, climate, interspecific relationships, copepods, sablefish, Vancouver I.)
: 820 (fishing vessel distribution, physical oceanography, salmon fisheries, Vancouver I.)
(5) : 903 (biomass, species composition, seasonal variations, zooplankton, continental shelf)
(6) : 1126 (spawning, channels, research programs, evaluation, sockeye salmon)
(7) : 1294 (genetic effects, body size, experimental fishing, catching methods, pink salmon)
: 1305 (genetic effects, body size, catching methods, analysis, pink salmon)
: 1389 (sublethal responses, suspended sediments, coho salmon, Fraser R.)
: 1478 (habitat selection, aggregations, migrations, coho salmon, Carnation Creek estuary)
(8) : 1650 (stock identification, DNA, electrophoresis, *Philonema*)
: 1657 (population structure, population factors, models, Pacific hake)
(9) : 1843 (homing behavior, straying, coho salmon, Vancouver I.)
: 1883 (parasites, mortality, *Ceratomyxa shasta*, juveniles, chinook salmon, Fraser R.)
: 1924 (distribution, mortality causes, *Chaetoceros convolutus*, *Chaetoceros concavicornis*)
(10) : 1972 (fishery management, escapement, spawning populations, coho salmon, rivers)
: 1982 (escapement, spawning populations, methodology, Salmonidae, rivers)
: 2164 (sport fishing, mortality, juveniles, coho salmon, chinook salmon, Saanich Inlet)
(12) : 2551 (predation, models, juveniles, Pacific salmons, squawfish, Columbia R.)
SP 115 (boring organisms, biological damage, pest control, taxonomy,

shipworms, gribbles)
116 (diseases, disease control, cage culture, Salmonidae)
TF 1797 (carrying capacity, evaluation, sockeye salmon, Pitt L.)
1798 (stock assessment, abundance, methodology, sockeye salmon, Henderson L., Vancouver I.)
1831 : 37 (aquaculture development, potential yield, historical account, Salmonidae)
1842 (production, colonization, hatcheries, coho salmon, Grant L.)
1849 (population structure, life history, stock identification, sockeye salmon)
1853 (survival, predation, production, stomach content, sockeye salmon, Pitt L.)
1858 (computer programs, tagging, data collections, coastal fisheries, Salmonidae)
MF 2013 (catch statistics, sport fishing, intertidal environment, Pacific salmons)
2093(2) (environmental impact, hydroelectric power plants, impoundments, fishery resources)
2101 (catch statistics, trolling, Pacific salmons)
2104 (fishery surveys, stock assessment, pinto abalone, Queen Charlotte Is.)
2115 (tagging, migrations, trap fishing, smolts, coho salmon, Vancouver I.)
2119 (stock assessment, potential yield, models, Pacific herring)
2128 (sportfishing statistics, angling, catch/effort, chinook salmon, Fraser R.)
2131 (inventories, resource conservation, habitat, marine fishes, Sooke Harbour, Vancouver I.)
2141 (predators, chinook salmon, rainbow trout, northern squawfish, mountain whitefish, bull trout, Nechako R.)
2144 (landing statistics, historical account, shellfish fisheries)
2146 (stock assessment, population structure, prediction, Pacific herring)
2147 (escapement, tagging, population structure, chinook salmon, Kitsumkalum R.)
2152 (fishery surveys, escapement, resource conservation, chinook salmon, Harrison R.)
2168 (tagging, escapement, stock assessment, chinook salmon, Wannock R.)
2172 (escapement, fish counters, hatcheries, chinook salmon, Stamp R., Robertson Creek)
2176 (environmental protection, herbicides, forest industry, habitat, freshwater fishes)
DF 786 (catchability, purse seining, sport fishing, coho salmon, chinook salmon, Saanich Inlet)
831 (tagging, migrations, trap fishing, smolts, coho salmon, Lachmach R.)
833 (stock assessment, escapement, fall, sockeye salmon, Owikeno L.)
834 (fishery surveys, spawning populations, spawning grounds, chum salmon, Nekite R.)
844 (tagging, migrations, trap fishing, smolts, coho salmon, Lachmach R., Antigonish Creek)
858 (echo surveys, escapement, fishery management, sockeye salmon, Rivers Inlet)
863 (fishery statistics, midwater trawls, Quesnel L.)
864 (fishery statistics, midwater trawls, freshwater lakes, sockeye salmon, Fraser R. drainage)
865 (biological data, age composition, geographical distribution, Pacific herring)
870 (fishery surveys, fishways, biological data, Pacific salmons, steelhead trout, Meziadin R.)
871 (stock assessment, fish counters, juveniles, coho salmon, Lachmach R.)
872 (fishery surveys, fish counters, escapement, sockeye salmon, Docee R.)
874 (stock identification, proteins, fishery management, chum salmon, S B.C.)
883 (fishery surveys, escapement, stock assessment, sockeye salmon, Owikeno L.)
886 (sportfishing statistics, catch/effort, aerial surveys, angling, Pacific salmons, char, sturgeon, Fraser R.)
IF 213 (stock assessment, spawning populations, roe fisheries, Pacific herring)
TH 124 (pollution effects, pulp wastes, water quality, Neroutsos Inlet)
135 (conferences, toxicity, algal blooms, environmental monitoring)
137 (phytoplankton, taxonomy, check lists, Esquimalt Lagoon)
DH 114 (biological surveys, burrowing organisms, benthos, fjords)

Browns Bank (*see* NORTHWEST ATLANTIC OCEAN)

Buccinum undatum (*see* WHELK, WAVED)

BULLHEAD, BLACK (*Ameiurus melas*)
J 49(10) : 2080 (PCBs, bioaccumulation, pollution indicators, sediments)

Bythotrephes cederstroemi (*see* INVERTEBRATA) (*Bythotrephes cederstroemii*)

C

Caddisflies (*see* TRICHOPTERA)

CALIFORNIA STATE, USA
J 49(6) : 1206 (phosphates, iron, phytoplankton, L. Tahoe)
(7) : 1357 (behavioral responses, sound, geophysical surveys, catch/effort, rockfishes)
: 1379 (hydrography, wind-driven currents, geographical distribution, larvae, Dungeness crab)

CANADA (*see also* PROVINCES; *also* TERRITORIES)
J 49(6) : 1171 (trophic status, indicator species, models, diatoms, freshwater lakes)
TF 1799 (conferences, algal blooms, toxicants, biological poisons, marine environment)
1831 : 21 (aquaculture development, temperature effects, historical account, Atlantic salmon, Atl. Canada)
: 75 (aquaculture enterprises, disease detection, fishery protection, natural populations, Salmonidae)
1836 (sex hormones, measurement, radioimmunoassay, freshwater fishes)
1867 (conferences, introduced species, ballast tanks, risks, endemic species)
1875 (environmental monitoring, acid rain, DFO, lakes, rivers)
DF 879 (chemical pollutants, chlorine compounds, intercalibration, marine environment)
IF 211 (aquaculture, research programs, reproduction, Arctic char, Atl. Canada)
TS 5551 (pollution monitoring, acidification, research programs, DFO)
EC 79 (economic analysis, exploitation, resource development, northern shrimp)
117F (economic analysis, fish consumption, nutritive value)

CANADA COASTS
TF 1863 : 222 (toxicity tests, sediments, Amphipoda, marine environment, brackishwater environment)

Cancer magister (*see* CRAB, DUNGENESS)

CAPELIN (*Mallotus villosus*)
J 49(11) : 2423 (migrations, tagging, stock identification, Nfld.)

Carcharhinus plumbeus (*see* SHARK, SANDBAR)

CATFISH, CHANNEL (*Ictalurus punctatus*)
J 49(11) : 2406 (fats, bioaccumulation, self purification, aquaculture)

Catostomus commersoni (*see* SUCKER, WHITE)

CEPHALOPODA (squids) (*see also* names of species)
J 49(2) : 218 (growth, age, statocysts, tropical environment)

Ceratium hirundinella (*see* DINOFLAGELLATA)

Ceratomyxa shasta (*see* MYXOSPOREA)

Chaetoceros concavicornis (*see* ALGAE)
convolutus (*see* ALGAE)

Chalcalburnus chalcoides mento (*see* BLEAK, DANUBE)

Chaoborus americanus (*see* INVERTEBRATA)

CHAR, ARCTIC (*Salvelinus alpinus*) (Arctic charr)
J 49(1) : 2 (mathematical models, variance analysis, weight, controlled conditions)
(2) : 229 (osmoregulation, photoperiods, light effects, Norway)
(3) : 443 (salinity tolerance, osmoregulation, anadromous species, landlocked species)
: 448 (osmoregulation, rheotaxis, annual variations, landlocked species)
DF 861 (fishery surveys, aerial photography, seining, evaluation, Firth R., Yuk., AK)
867 (stock assessment, biological data, fish counters, Meliadine R., N.W.T.)
878 (stock assessment, biological data, fish counters, Freshwater Creek, N.W.T.)
IF 211 (aquaculture, research programs, reproduction, Atl. Canada)
212 (conferences, aquaculture, research programs, technology transfer, Nfld.)

Charr, Arctic (*see* CHAR, ARCTIC)

CHARS (*Salvelinus* spp.)
DF 886 (sportfishing statistics, catch/effort, aerial surveys, angling, Fraser R., B.C.)

CHILE
TF 1831 : 51 (aquaculture development, economics, historical account, Salmonidae)

CHINA, REPUBLIC
TH 103 (microplankton, fossils, taxonomy, dinoflagellates)
TS 5568 (prawn culture, nutritional requirements, lipids, fleshy prawn)
5569 (aquaculture, metabolism, fatty acids, Cyprinidae)
5570 (prawn culture, fish culture,

nutritional requirements, lipids)

Chionoecetes opilio (*see* CRAB, SNOW)

Chironomidae (*see* DIPTERA)

Chironomus sp. (*see* DIPTERA)

Chlamys islandica (*see* SCALLOP, ICELAND)

Chondrostoma nasus (*see* NASE)

Chondrus crispus (*see* MOSS, IRISH)

CHUCKCHEE SEA
TS 5563 (parasites, lungs, taxonomy, new species, *Parafilaroides krascheninnikovi*, ringed seal)
5564 (parasites, taxonomy, new species, *Parafilaroides arcticus*, ringed seal)

Cisco (*see* HERRING, LAKE)

CISCO, ARCTIC (*Coregonus autumnalis*)
MF 2125 (tagging, migrations, sonic tags, SE Beaufort Sea)

CISCO, LEAST (*Coregonus sardinella*)
TF 1811 (migrations, Kukjuktuk Creek, N.W.T.)

CLADOCERA (*see also* CRUSTACEA)
J 49(1) : 159 (predation, avoidance reactions, feeding behavior, *Daphnia pulex*)
(8) : 1633 (toxicity tests, bicarbonates, pore water, Grand Calumet R., MI)
(11) : 2392 (pollution effects, acidification, aluminum, *Daphnia galeata mendotae*, *Bosmina longirostris*)

Clam, hard (*see* QUAHOG, NORTHERN)

Clupea harengus (*see* HERRING, ATLANTIC)
harengus membras (*see* HERRING, BALTIC)
pallasi (*see* HERRING, PACIFIC)
(*Clupea harengus pallasi*)
sprattus (*see* SPRAT)

CLUPEIDAE
TS 5580(2) (population characteristics, seasonal variations, migrations, Atlantic herring, sprat, Kiel Bay, Baltic Sea)

COD, ATLANTIC (*Gadus morhua*) (Baltic cod)
J 49(2) : 202 (biomass, trap nets, time series analysis, Gulf of St. Lawrence, Nfld.)
: 238 (geographical distribution, eggs, spawning populations, Scotian Shelf, NW Atl.)
: 347 (parasites, laboratory culture, development, *Contracaecum osculatum*)
(3) : 516 (freezing, glycoproteins, overwintering, juveniles)
(6) : 1149 (physiology, osmoregulation, seasonal variations, salinity tolerance)
(8) : 1570 (behavior, activity patterns, feeding experiments, larvae)
(10) : 2118 (fecundity, sperm, hatching, eggs)
(12) : 2588 (environmental effects, water temperature, ice, survival, Nfld.)
: 2635 (parasites, muscles, *Anisakis simplex*, Nfld., Labrador)
TF 1844 (conferences, stock assessment, biomass, NW Atl.)
TS 5577 (gear selectivity, catchability, longlining, Norway)
5579 (aquaculture, economics, marketing, Norway)

COMPUTER PROGRAMS AND DATA PROCESSING
J 49(8) : 1588 (trophic relationships, food webs, pelagic environment, Oneida L., NY, L. St. George, Ont.)
TF 1807 (manuals, data collections, commercial fishing, Pacific salmons)
1840 (computers, acoustic data, graphic methods)
1848 (computer programs, chemical speciation, algorithms, manuals)
1858 (tagging, data collections, coastal fisheries, Salmonidae, B.C.)
MF 2149 (data collections, catch statistics, catch composition, American lobster, Scotia-Fundy Region, NW Atl.)
TH 138 (computer programs, titration, dissolved oxygen, manuals)

CONFERENCES
TF 1799 (algal blooms, toxicants, biological poisons, marine environment, Canada)
1831 (aquaculture development, aquaculture techniques, economics, Salmonidae, World Waters)
1832 (aquaculture, biology, striped bass, Scotia-Fundy Region, NW Atl.)
1838 (environmental impact, hydroelectric power, white whale, Nelson R. estuary, Man.)
1844 (stock assessment, biomass, Atlantic cod, NW Atl.)
1863 (toxicology, aquatic environment, environmental monitoring, World Waters)
: 2 (toxicity tests, environmental legislation, evaluation)
1867 (introduced species, ballast tanks, risks, endemic species, Canada)
MF 2126F (research programs, population dynamics, pollution effects, white whale, Gulf of St. Lawrence)
2140 (chemical pollutants, PCBs, experimental research, Experimental Lakes Area, NW Ont.)
IF 212 (aquaculture, research programs, technology transfer, Arctic char,

Nfld.)
TH 135 (toxicity, algal blooms, environmental monitoring, B.C.)
140 (models, oceanography, sea ice, wave motion, World Oceans)

CONNECTICUT STATE, USA
J 49(7) : 1455 (grazing, zooplankton, phytoplankton, models, freshwater lakes)

Contracaecum osculatum (*see* NEMATODA)

Copepoda (*see* CRUSTACEA)

Coregonus artedi (*see* HERRING, LAKE) (cisco)
autumnalis (*see* CISCO, ARCTIC)
clupeaformis (*see* WHITEFISH, LAKE)
hoyi (*see* BLOATER)
nasus (*see* WHITEFISH, BROAD)
sardinella (*see* CISCO, LEAST)

CORRECTIONS
J 49(2) : 427 (to J 48(10) : 1985, 1986)
(8) : 1751 (to J 44(4) : 860)

Corynosoma wegeneri (*see* ACANTHOCEPHALA)

Cottus confusus (*see* SCULPIN, SHORTHEAD)

CRAB, DUNGENESS (*Cancer magister*)
J 49(7) : 1379 (hydrography, wind-driven currents, geographical distribution, larvae, WA, OR, CA)
(10) : 2028 (recruitment, variability, oceanic convection, environmental effects, WA)

CRAB, HARRIS MUD (*Rhithropanopeus harrisii*)
J 49(6) : 1268 (bioassays, regeneration, limbs)

CRAB, SNOW (*Chionoecetes opilio*)
J 49(7) : 1282 (moulting, reproduction, Gulf of St. Lawrence)
(8) : 1619 (sexual maturity, ecdysones, males)
(12) : 2460 (sexual maturity, reproductive organs, morphology, males)
TF 1847 (fishery development, historical account, SW Gulf of St. Lawrence)
1886F (crab fisheries, shells, decalcification, Gulf of St. Lawrence)
MF 2156F (geographical distribution, population structure, stock assessment, Saguenay Fjord, Que.)
TS 5559 (moulting, males, Sea of Japan)
EC 88F (economic analysis, market research, landing statistics, Que.)

CRAB, [SWIMMING] (*Portunus trituberculatus*)
J 49(11) : 2373 (crab culture, disease control, bacteria, Japan)

Crassostrea virginica (*see* OYSTER, EASTERN) (Oyster, American)

Crayfish (*Orconectes*) (*see* CRUSTACEA)

CRUISES (*see also* FISHERIES AND FISHABLE STOCKS)
DF 866 (R/V *W.E. Ricker*, fishery surveys, stock assessment, biological data, Hecate Strait, NE Pac.)
DH 112 (CCGS *Henry Larsen*, oceanographic data, nutrients, salinity, Beaufort Sea)

CRUSTACEA (*see also* names of species)
J 49(2) : 327 (parasitism, models, fishery management)
: 389 (length, periodic variations, zooplankton, *Neocalanus plumchrus*, *Neocalanus flemingeri*, Gulf of Alaska, AK)
(3) : 609 (fecundity, population density, predation, *Microarthridion littorale*, North Inlet, SC)
(4) : 743 (environmental effects, climate, interspecific relationships, sablefish, Vancouver I., B.C.)
(5) : 857 (environmental effects, outflow waters, community composition, zooplankton, Gulf of St. Lawrence)
: 1035 (species composition, spatial variations, temporal variations, zooplankton, L. Winnipeg, Man.)
(6) : 1137 (vertical migrations, diurnal variations, predation, Pacific sand lance, *Pseudocalanus newmani*, Dabob Bay, WA)
(8) : 1714 (trophic relationships, predation, rock bass, smallmouth bass, *Orconectes luteus*, *Orconectes punctimanus*, MO)
SP 115 (boring organisms, biological damage, pest control, gribbles, B.C.)
TF 1825 (geographical distribution, environmental effects, check lists, lakes, Nfld.)
DF 862 (zooplankton, limnology, climate, Red L. district, L. Nipigon, NW Ont.)
868 (check lists, seasonal distribution, abundance, zooplankton, L. Winnipeg, Man.)
TS 5570 (prawn culture, nutritional requirements, lipids, Rep. China)
5572 (catch statistics, fishery economics, fishery management, Norway)

CYPRINIDAE (*see also* names of species)
TS 5569 (aquaculture, metabolism, fatty acids, Rep. China)

Cystophora cristata (*see* SEAL, HOODED)

D

DACE, FINESCALE (*Phoxinus neogaeus*)
DF 846 (pollution effects, acidification, length, Experimental Lakes Area, NW Ont.)

DACE, NORTHERN REDBELLY (*Phoxinus eos*)
DF 846 (pollution effects, acidification, length, Experimental Lakes Area, NW Ont.)

DACE, PEARL (*Margariscus margarita*) (*Semotilus margarita*)
DF 846 (pollution effects, acidification, length, Experimental Lakes Area, NW Ont.)

Daphnia galeata mendotae (*see* CLADOCERA)
pulex (*see* CLADOCERA)

Delphinapterus leucas (*see* WHALE, WHITE) (beluga)

Diatoms (*see* ALGAE)

Didymocystis gen. (*see* TREMATODA)

DIDYMOSULCUS (Trematoda)
TS 5565 (new genus, taxonomy)

DINOFLAGELLATA (dinoflagellates)
J 49(4) : 694 (primary production, vertical migrations, phosphorus, *Ceratium hirundinella*, Eau Galle Reservoir, WI)
TH 103 (microplankton, fossils, taxonomy, Rep. China)

DIPTERA (two-winged insects)
J 49(4) : 833 (pollution effects, acidification, larvae, blackflies)
(11) : 2291 (life cycle, abnormalities, sediment pollution, *Chironomus*, L. Vossemeer, Netherlands)
(S1) : 76 (pollution effects, acidification, community composition, Chironomidae, rivers, Sudbury, Ont.)

DISEASES AND PARASITES
J 49(1) : 166 (diseases, pollution effects, pulp wastes, skull, northern pike, Gulf of Bothnia, Baltic Sea)
(2) : 327 (parasitism, models, fishery management, Crustacea)
: 347 (parasites, laboratory culture, development, Atlantic cod, *Contracaecum osculatum*)
(3) : 513 (parasites, hosts, sealworm, *Neomysis americana*, *Gammarus oceanicus*, Wallace L., Sable I., N.S.)
(5) : 878 (lesions, blood vessels, growth rate, Atlantic salmon)
: 956 (parasites, stomach, nematodes, harp seal, Nfld., Labrador)
: 1070 (pharmacokinetics, metabolism, sulfadimethoxine, rainbow trout)
(8) : 1650 (parasitism, stock identification, *Philonema*, Pacific salmons, B.C.)
(9) : 1883 (parasites, mortality causes, *Ceratomyxa shasta*, juveniles, chinook salmon, Fraser R., B.C.)
(10) : 2062 (parasitism, *Corynosoma wegeneri*, sealworm, demersal fishes, Scotian Shelf, NW Atl.)
(11) : 2373 (disease control, crab culture, bacteria, [swimming] crab, Japan)
(12) : 2635 (parasites, muscles, *Anisakis simplex*, Atlantic cod, Nfld., Labrador)
SP 116 (diseases, disease control, cage culture, Salmonidae, B.C., WA)
TF 1831 : 75 (disease detection, aquaculture enterprises, fishery protection, natural populations, Salmonidae, Canada)
1863 : 106 (tumors, liver, environmental monitoring, water quality, fishes)
1882 (bacterial diseases, economic analysis, shellfish closures, Mollusca, P.E.I.
TS 5552 (parasites, taxonomy, monorchism, *Bolbosoma porta*)
5553 (parasites, new species, taxonomy, *Bolbosoma tuberculata*, South Atlantic Ocean, Indian Ocean)
5563 (parasites, new species, lungs, *Parafilaroides kraschenninnikovi*, ringed seal, Chuckchee Sea, Bering Sea)
5564 (parasites, taxonomy, new species, *Parafilaroides arcticus*, ringed seal, Chuckchee Sea)
5565 (parasites, taxonomy, revision, *Didymocystis*, new genera, *Didymosculcus*)
5578 (parasitism, lenitic environment, limnology, freshwater fishes, Kola Peninsula, Russia)

DISTRIBUTION AND ABUNDANCE
J 49(1) : 23 (population density, echo surveys, fishery management, haddock, Scotian Shelf, NW Atl.)
: 185 (metaphyton, algae, lakes, Ont.)
(2) : 202 (biomass, trap nets, time series analysis, Atlantic cod, Gulf of St. Lawrence, Nfld.)
: 238 (geographical distribution, eggs, spawning populations, Atlantic cod, haddock, witch flounder, Scotian Shelf, NW Atl.)
: 379 (picoplankton, production, biomass, L. Huron, L. Michigan)
: 406 (mapping, dispersion, zebra mussel, lakes, Ont.)
: 416 (geographical distribution, introduced species, new records, tubenose goby, round goby, St. Clair R., North America)
: 422 (introduced species, new records, zooplankton, *Bythotrephes cederstroemi*, Muskoka, Ont.)
(3) : 467 (geographical distribution, dispersion, larvae, American plaice, yellowtail flounder, witch flounder, Grand Bank, NW Atl.)

: 484 (dispersion, recruitment, larvae, haddock, Georges Bank, NW Atl.)
: 513 (new records, hosts, sealworm, *Neomysis americana*, ponds, Wallace L., Sable I., N.S.)
: 532 (biomass, production, regression analysis, running water, invertebrates)
: 565 (vertical distribution, feeding behavior, pelagic environment, Aesop shrimp, Resolution I., E Hudson Strait, Arctic)
(4) : 708 (length, models, summer, Pacific hake, Vancouver I., B.C.)
: 743 (environmental effects, climate, interspecific relationships, copepods, sablefish, Vancouver I., B.C.)
(5) : 842 (horizontal distribution, vertical distribution, echo surveys, Aesop shrimp, Resolution I., Hudson Strait, Arctic)
: 985 (aggregations, population number, fresh water, mussels)
: 1060 (geographical distribution, biomass, zooplankton, Hudson R., NY)
(6) : 1246 (geographical distribution, habitat, geomorphology, Salmonidae, South Stillaguamish R., WA)
(7) : 1379 (hydrography, wind-driven currents, larvae, Dungeness crab, WA, OR, CA)
: 1493 (species diversity, community composition, habitat selection, freshwater fishes, WI)
: 1501 (geographical distribution, new records, "quagga mussel", Great Lakes, North America)
(8) : 1597 (dispersion, environmental effects, physical oceanography, larvae, sea scallop, Georges Bank, NW Atl.)
: 1616 (new records, introduced species, ruffe, St. Louis R., L. Superior)
: 1734 (abundance, community composition, historical account, zooplankton, L. Michigan)
(9) : 1754 (distribution, recruitment, numerical analysis, marine fishes)
: 1762 (abundance, environmental effects, equatorial upwelling, Peruvian anchoveta, Peru)
: 1778 (species composition, environmental effects, river discharge, aquatic insects, Man.)
: 1796 (fishery management, harvesting, resource conservation, chub mackerel, Japan)
: 1924 (temporal distribution, geographical distribution, mortality causes, *Chaetoceros convolutus*, *Chaetoceros concavicornis*, B.C.)
(10) : 2086 (geographical distribution, natural populations, sea scallop, Nfld.)
: 2179 (stock assessment, echo surveys, vertical migrations, fishes, L. Memphremagog, Que.)
(11) : 2307 (geographical distribution, migrations, deep water, chum salmon, Iwate Prefecture, Japan)
: 2412 (abundance, heterotrophic organisms, environmental factors, bacteria, rivers, Ont.)
(12) : 2546 (aerial surveys, population number, pups, hooded seal, Gulf of St. Lawrence)
: 2611 (colonization, limiting factors, models, lakes, zebra mussel)
: 2621 (life history, habitat, juveniles, chinook salmon, Situk R., AK)
(S1) : 114 (geographical distribution, pollution effects, acidification, Amphibia, ponds, Sudbury, Ont.)
TF 1776 (aerial surveys, census, photography, white whale, St. Lawrence R. estuary)
1798 (abundance, stock assessment, methodology, sockeye salmon, Henderson L., Vancouver I., B.C.)
1801 (geographical distribution, fishery surveys, larvae, American lobster, Scotian Shelf, NW Atl.)
1802 (geographical distribution, primary production, spatial variations, phytoplankton, Alberni Inlet, Barkley Sound, NE Pac.)
1814 (environmental impact, hydroelectric power, macroinvertebrates, Playgreen L., Kiskittogisu L., Man.)
1837 (abundance, environmental effects, environmental impact, burrowing mayfly, Southern Indian L., Man.)
1870F (population number, fishery surveys, intertidal environment, St. Lawrence R. estuary)
MF 1887 (geographical distribution, habitat, environmental effects, American lobster)
2110 (spatial distribution, fishery surveys, larvae, American lobster, Jeddore Harbour, N.S.)
2127 (check lists, benthos, molluscs, L. Winnipeg, Man.)
2156F (geographical distribution, population structure, snow crab, Saguenay Fjord, Que.)
2162 (geographical records, dispersion, larvae, Eastern oyster, Caraquet Bay, N.B.)
DF 865 (geographical distribution, biological data, Pacific herring, B.C.)
868 (abundance, seasonal distribution, check lists, Crustacea, L. Winnipeg, Man.)
869 (abundance, seasonal distribution, check lists, Oligochaeta, L. Winnipeg, Man.)

TS 5560 (biomass, secondary production, regression analysis, lotic environment, benthic invertebrates)

DNA (Deoxyribonucleic acid) (*see* GENETICS; *see also* PHYSIOLOGY AND BIOCHEMISTRY)

DOGFISH, SPINY (*Squalus acanthias*)
TS 5567 (product development, cured products, by catch, Germany, Norway)

DOLLY VARDEN (*Salvelinus malma*)
DF 861 (fishery surveys, aerial photography, seining, evaluation, Firth R., Yuk., AK)

Dorosoma cepedianum (*see* SHAD, GIZZARD)

Dreissena polymorpha (*see* MUSSEL, ZEBRA)

DREISSENIDAE
J 49(7) : 1501 (new records, geographical distribution, stock identification, "quagga mussel", Great Lakes, North America)

DRUM, FRESHWATER (*Aplodinotus grunniens*)
J 49(1) : 173 (environmental effects, survival, winter, Mississippi R., USA)
(2) : 293 (population dynamics, interspecific relationships, commercial fishing, walleye, yellow perch, Red L., MN)

E

ECONOMICS AND SOCIOLOGY
J 49(3) : 497 (fishery economics, quota regulations, rent, models)
(8) : 1573 (economic analysis, stocking, landing statistics, commercial fisheries, Japan)
(11) : 2313 (fishery economics, quota regulations, fishery management, models, sablefish, N Pac.)
TF 1794 (sociology, environmental impact, flood control, L. Winnipeg, Churchill R., Man.)
1831 (conferences, aquaculture development, aquaculture techniques, Salmonidae, World Waters)
: 9 (aquaculture development, historical account, Atlantic salmon, Scotland)
: 51 (aquaculture development, historical account, Salmonidae, Chile)
: 85 (economics, aquaculture techniques, selective breeding, Atlantic salmon)
: 125 (economics, aquaculture techniques, fish meal, nutritional requirements, Salmonidae)
: 153 (economics, marketing, aquaculture products, Salmonidae, USA, Japan)
1882 (economic analysis, shellfish closures, bacterial diseases, Mollusca, P.E.I.)
TS 5555 (fishery economics, fishery industry, processing fishery products, Norway)
5556 (market research, aquaculture industry, aquaculture techniques, Norway)
5567 (product development, cured products, by catch, spiny dogfish, Germany, Norway)
5571 (market research, fish consumption, trade, Salmonidae, Japan)
5572 (fishery economics, fishery management, catch statistics, Norway)
5579 (aquaculture, economics, marketing, Atlantic cod, Norway)
EC 33 (aquaculture economics, marketing, Atlantic salmon, Maritime Provinces, Nfld.)
79 (economic analysis, exploitation, resource development, northern shrimp, Canada)
84F (economic analysis, fishery industry, fishery resources, Que.)
85 (economic analysis, fishery management, habitat, N.W.T., Yuk.)
88F (economic analysis, market research, landing statistics, snow crab, Que.)
105F (fishery statistics, fishery economics, fishery management, Gulf of St. Lawrence)
117F (economic analysis, fish consumption, nutritive value, Canada)
118F (market research, fish consumption, seafood, food fish)
121F (economic analysis, landing statistics, marketing, sea scallop, Que.)
122 (fishery statistics, landing statistics, harvesting, Scotia-Fundy Region, NW Atl.)

ECUADOR
J 49(1) : 78 (population structure, photographs, females, juveniles, sperm whale, Galapagos Is.)

EGGS AND LARVAE (*see also* names of species)
J 49(2) : 238 (eggs, geographical distribution, spawning populations, Atlantic cod, haddock, witch flounder, Scotian Shelf, NW Atl.)
: 368 (larvae, growth, survival, lipids, northern shrimp)
(3) : 467 (larvae, geographical distribution, dispersion, American plaice, yellowtail flounder, witch flounder, Grand Bank, NW Atl.)
: 484 (larvae, recruitment, dispersion, haddock, Georges Bank, NW Atl.)
(4) : 813 (larvae, feeding behavior, prey selection, golden shiner)

(5) : 967 (larvae, methodology, measurement, RNA, DNA, Pacific herring)
(7) : 1379 (larvae, hydrography, wind-driven currents, geographical distribution, Dungeness crab, WA, OR, CA)
: 1439 (larvae, growth, otoliths, back calculation, striped bass)
(8) : 1570 (larvae, behavior, activity patterns, feeding experiments, turbot, Atlantic cod)
: 1597 (larvae, environmental effects, physical oceanography, dispersion, sea scallop, Georges Bank, NW Atl.)
(9) : 1778 (larvae, selective breeding, body size, females, striped bass, SC)
(10) : 2118 (eggs, fecundity, sperm, hatching, Atlantic cod)
(12) : 2588 (environmental effects, water temperature, ice, survival, Atlantic cod, Nfld.)
TF 1801 (larvae, fishery surveys, geographical distribution, American lobster, Scotian Shelf, NW Atl.)
MF 2110 (larvae, fishery surveys, spatial distribution, American lobster, Jeddore Harbour, N.S.)
2162 (larvae, geographical records, biological data, dispersion, Eastern oyster, Caraquet Bay, N.B.)
TS 5558 (developmental stages, atlases, check lists, fishes, Japan)

Ehu (*see* SNAPPER, RUBY)

ELIMIA, CLUB (*Elimia clavaeformis*) (snail)
J 49(6) : 1257 (competition, food availability, controlled conditions, caddisflies)

Elimia clavaeformis (*see* ELIMIA, CLUB)

Engraulis mordax (*see* ANCHOVY, NORTHERN)
ringens (*see* ANCHOVETA, PERUVIAN)

ENVIRONMENTAL EFFECTS
J 49(1) : 173 (water temperature, dissolved oxygen, survival, winter, freshwater drum, Mississippi R., USA)
(2) : 229 (light effects, photoperiods, osmoregulation, Arctic char, Norway)
(3) : 584 (fire, nutrients, streams, Experimental Lakes Area, NW Ont.)
: 617 (colonization, lotic environment, invertebrates, World Inland Waters)
(4) : 743 (climate, interspecific relationships, abundance, copepods, sablefish, Vancouver I., B.C.)
(5) : 857 (outflow waters, community composition, zooplankton, Gulf of St. Lawrence)
: 885 (light intensity, catchability, freshwater fishes, L. IJssel, Netherlands)
(6) : 1114 (water temperature, photoperiods, seasonal variations, spawning, American lobster)
: 1118 (embryonic development, temperature effects, models, *Bythotrephes cederstroemii*)
: 1149 (seasonal variations, osmoregulation, salinity tolerance, Atlantic cod)
: 1163 (environmental factors, growth, shells, blue mussel)
: 1198 (floods, nutrient enrichment, biomass, periphyton, Ozark Plateau, MO)
: 1236 (sewage, eutrophic waters, nutrients, Pearce L., Que.)
: 1246 (deglaciation, geomorphology, habitat, Salmonidae, South Fork Stillaguamish R., WA)
(7) : 1379 (hydrography, wind-driven currents, geographical distribution, larvae, Dungeness crab, WA, OR, CA)
(8) : 1597 (physical oceanography, dispersion, larvae, sea scallop, Georges Bank, NW Atl.)
(9) : 1778 (substrata, river discharge, population density, aquatic insects, Man.)
(10) : 2028 (recruitment, variability, oceanic convection, environmental effects, Dungeness crab, WA)
: 2055 (photoperiod, water temperature, reproduction, Atlantic salmon)
(11) : 2281 (production, phytoplankton, saline lakes, Humboldt L., Redberry L., Sask.)
: 2399 (salinity tolerance, osmoregulation, swimming, juveniles, coho salmon)
: 2412 (environmental factors, abundance, heterotrophic organisms, bacteria, rivers, Ont.)
(12) : 2588 (water temperature, ice, eggs, larvae, Atlantic cod, Nfld.)
TF 1825 (acidification, geographical distribution, check lists, rotifers, crustaceans, lakes, Nfld.)
1829 (pulp wastes, mixed function oxygenases, procedures, fishes)
1831 : 21 (temperature effects, aquaculture development, historical account, Atlantic salmon, Atl. Canada, ME)
1837 (weather, abundance, burrowing mayfly, Southern Indian L., Man.)
1875 (acid rain, environmental monitoring, DFO, lakes, rivers, Canada)
1887 (habitat, life history, geographical distribution, American lobster)
MF 2163 (environmental surveys, habitat improvement, methodology, rivers)
TH 132 (water temperature, coastal oceanography, monitoring, NW Atl.)

135 (conferences, toxicity, algal blooms, environmental monitoring, B.C.)
DH 115 (water temperature, salinity, aquaculture facilities, Atlantic salmon, L'Etang Inlet, N.B.)
TS 5557 (environmental capacity, ecosystems)
5562 (water temperature, embryonic development, marine fishes)

ENVIRONMENTAL IMPACT
J 49(2) : 349 (harvesting, frond density, biomass, Irish moss, S Gulf of St. Lawrence)
: 358 (DNA, genetics, geographical isolation, white sturgeon, Fraser R., B.C.)
(7) : 1486 (scallop fisheries, trawling, injuries, American lobster, N.S.)
(9) : 1826 (turbines, survival, American shad)
(S1) : 63 (pollution control, acidification, benthos, macroinvertebrates, lakes, Sudbury, Ont.)
SP 115 (boring organisms, biological damage, pest control, shipworms, gribbles, B.C.)
TF 1794 (flood control, resource harvesting, L. Winnipeg, Churchill R., Man.)
1806 (flood control, hydrology, fisheries, L. Winnipeg, Churchill R., Man.)
1814 (hydroelectric power, abundance, population structure, macroinvertebrates, Playgreen L., Kiskittogisu L., Man.)
1823 (reservoirs, feeding behavior, reproduction, northern pike, Wupaw Bay, Southern Indian L., Man.)
1824 (impoundments, bioaccumulation, mercury, freshwater fishes, Southern Indian L., Issett L., Man.)
1830F (habitat, commercial fishing, St. Lawrence R., Gulf of St. Lawrence)
1837 (hydroelectric power plants, abundance, burrowing mayfly, Southern Indian L., Man.)
1838 (conferences, hydroelectric power, white whale, Nelson R. estuary, Man.)
1845F (pollutants, habitat, white whale, St. Lawrence R. estuary)
1885 (environmental conditions, pollutants, historical account, East coast, NW Atl.)
MF 2093(2) (hydroelectric power plants, impoundments, fishery resources, B.C.)
2121 (suspended sediment, growth, measurement, blue mussel)
2163 (environmental surveys, habitat improvement, methodology, rivers)
TH 142 (environmental monitoring, nuclear power plants, Point Lepreau, N.B.)

ERIE, LAKE, NORTH AMERICA
J 49(9) : 1932 (feeding behavior, body size, abundance, zooplankton, yellow perch)

Escherichia coli (*see* BACTERIA)

Esox lucius (*see* PIKE, NORTHERN)

Etelis carbunculus (*see* SNAPPER, RUBY)

EXPERIMENTAL LAKES AREA, NORTHWESTERN ONTARIO
J 49(1) : 17 (chemical limnology, methyl mercury, production, control)
(3) : 584 (environmental effects, fire, nutrients, streams)
(4) : 722 (pollutants, dioxins, fate, enclosures)
: 735 (bioavailability, dioxins, enclosures, invertebrates, white sucker)
MF 2140 (conferences, chemical pollutants, PCBs, experimental research)
DF 846 (pollution effects, acidification, length, pearl dace, fathead minnow, finescale dace, northern redbelly dace)
850 (limnology, light attenuation, mixed-layer)

F

FINLAND
J 49(8) : 1555 (sampling, trawling, age groups, length, roach, L. Vesijärvi)

FISH HANDLING
J 49(2) : 312 (depuration, domoic acid, toxicity, blue mussel, P.E.I.)
(11) : 2260 (fish culture, metabolism, starvation, rainbow trout)
TF 1768 (fishery products, food consumption, analysis, *Escherichia coli*)
MF 2132 (fishery industry plants, pollution effects, chemical oceanography, Black's Harbour, N.B.)
TS 5554 (quality control, processing fishery products, hygiene, Iceland)
5555 (processing fishery products, fishery industry, fishery economics, Norway)
5573 (organoleptic properties, quality control, tests, flying squid)
5575 (processing fishery products, enzymatic activity, raw materials, literature reviews)

FISHERIES AND FISHABLE STOCKS
J 49(1) : 23 (population density, echo surveys, fishery management, haddock, Scotian Shelf, NW Atl.)
: 32 (biomass, mapping, methodology, northern shrimp, Gulf of St. Lawrence)
(2) : 202 (biomass, trap nets, time

series analysis, Atlantic cod, Gulf of St. Lawrence, Nfld.)
: 210 (fishery management, fecundity, recruitment, models)
: 281 (population dynamics, genetics, models, sockeye salmon)
: 293 (population dynamics, interspecific relationships, commercial fishing, walleye, yellow perch, freshwater drum, Red L., MN)
: 327 (fishery management, parasitism, models, Crustacea)
(3) : 432 (tagging, evaluation, statistical analysis)
: 497 (fishery economics, quota regulations, rent, models)
(4) : 820 (fishing vessel distribution, physical oceanography, salmon fisheries, Vancouver I., B.C.)
(5) : 842 (echo surveys, geographical distribution, vertical distribution, Aesop shrimp, Resolution I., Hudson Strait, Arctic)
: 885 (environmental effects, light intensity, catchability, freshwater fishes, L. IJssel, Netherlands)
: 922 (stock assessment, methodology, mathematical analysis, orange roughy, Chatham Rise, New Zealand)
: 931 (models, exploitation, natural populations, cultured organisms, fishes)
: 985 (fishery surveys, aggregations, population number, fresh water, mussels)
(6) : 1126 (fishery management, spawning, channels, evaluation, sockeye salmon, B.C.)
: 1157 (commercial fisheries, biological stress, air exposure, rainbow trout)
(7) : 1294 (genetic effects, body size, experimental fishing, catching methods, pink salmon, B.C.)
: 1305 (genetic effects, body size, catching methods, analysis, pink salmon, B.C.)
: 1315 (models, catch/effort, catch statistics, Pacific ocean perch)
: 1357 (catch/effort, behavioral responses, sound, geophysical surveys, rockfishes, CA)
: 1366 (demersal fisheries, fishery data, trawling, models, Bering Sea)
: 1396 (fishery management, evaluation, models, South African fur seal, South Africa)
: 1486 (environmental impact, scallop fisheries, trawling, injuries, American lobster, N.S.)
(8) : 1528 (yield predictions, biomass, ecosystems, aquatic organisms, World Waters)
: 1539 (catchability, gillnets, population density, brown trout, Norway)
: 1546 (gear selectivity, gillnets, catchability, models, brown trout, L. Løyning, Norway)
: 1555 (sampling, trawling, age groups, length, roach, L. Vesijärvi, Finland)
: 1573 (stocking, economic analysis, landing statistics, Japan)
: 1624 (gear selectivity, trawl nets, graphs)
(9) : 1762 (stock assessment, environmental effects, equatorial upwelling, Peruvian anchoveta, Peru)
: 1796 (fishery management, harvesting, resource conservation, chub mackerel, Japan)
: 1816 (fishery management, tagging, models, hatcheries, coho salmon)
: 1843 (fishery management, homing behavior, straying, coho salmon, Vancouver I., B.C.)
: 1890 (fishery management, habitat improvement, fertilizers, Arctic grayling, Kuparuk R., AK)
(10) : 1972 (fishery management, escapement, spawning populations, coho salmon, rivers, B.C.)
: 1982 (fishery management, escapement, spawning populations, methodology, Salmonidae, rivers, B.C.)
: 2020 (fishery management, recruitment, variance analysis, mortality)
: 2104 (mesh selectivity, trawling, evaluation, Atlantic herring, Baltic Sea)
: 2164 (sport fishing, mortality, juveniles, coho salmon, chinook salmon, Saanich Inlet, B.C.)
: 2179 (stock assessment, echo surveys, vertical migrations, L. Memphremagog, Que.)
(11) : 2222 (dispersion, population dynamics, stock assessment, marine fishes, haddock, Scotian Shelf, NW Atl.)
: 2232 (migrations, echo surveys, advection, Atlantic mackerel, Brador Bay, Gulf of St. Lawrence)
: 2313 (fishery economics, quota regulations, models, sablefish, N Pac.)
(12) : 2434 (fishery limnology, lake morphology, research programs, Ont.)
: 2515 (aerial surveys, stock assessment, data acquisition, northern anchovy)
: 2527 (stock identification, DNA, biopolymorphism, haddock, NW Atl.)
: 2538 (stock identification, DNA, biopolymorphism, American plaice, Gulf of St. Lawrence)
: 2551 (predation, models, juveniles, Pacific salmons, squawfish, Columbia R., WA)

: 2648 (demersal fisheries, community composition, species diversity, trawling, WA, OR)
TF 1741F (models, fishery statistics, catch/effort)
1794 (resource harvesting, environmental impact, flood control, L. Winnipeg, Churchill R., Man.)
1798 (stock assessment, abundance, methodology, sockeye salmon, Henderson L., Vancouver I., B.C.)
1801 (fishery surveys, geographical distribution, larvae, American lobster, Scotian Shelf, NW Atl.)
1806 (flood control, fisheries, L. Winnipeg, Churchill R., Man.)
1807 (commercial fishing, data collections, manuals, computer programs, Pacific salmons)
1813 (habitat improvement, spawning grounds, bibliographies, walleye, Salmonidae, Great Lakes, North America)
1830F (environmental impact, habitat, commercial fishing, St. Lawrence R., Gulf of St. Lawrence)
1832 (conferences, aquaculture, biology, striped bass, Scotia-Fundy Region, NW Atl.)
1833F (fishery management, gear selectivity, waved whelk, Magdalen Is., Gulf of St. Lawrence)
1842 (production, colonization, hatcheries, coho salmon, Grant L., B.C.)
1844 (conferences, stock assessment, biomass, Atlantic cod, NW Atl.)
1847 (fishery development, historical account, snow crab, SW Gulf of St. Lawrence)
1860 (biological sampling, biological data, population structure, short-finned squid, Nfld.)
1862 (catching methods, comparative studies, mortality, eastern oyster, North R., P.E.I.)
1870F (fishery surveys, intertidal environment, population number, St. Lawrence estuary)
1882 (economic analysis, shellfish closures, bacterial diseases, Mollusca, P.E.I.)
1886F (crab fisheries, shells, decalcification, snow crab, Gulf of St. Lawrence)
1892 (commercial fishing, fishery policy, economic models, Nfld.)
MF 2013 (catch statistics, sport fishing, intertidal environment, Pacific salmons, B.C.)
2090 (stock assessment, fishery surveys, fishery management, softshell, Cole Harbour, N.S.)
2093(2) (environmental impact, hydroelectric power plants, impoundments, fishery resources, B.C.)
2101 (fishery management, catch statistics, trolling, Pacific salmons, B.C.)
2104 (fishery surveys, stock assessment, pinto abalone, Queen Charlotte Is., B.C.)
2106 (fishery surveys, seiners, stock assessment, lingcod, Strait of Georgia, NE Pac.)
2110 (fishery surveys, spatial distribution, larvae, American lobster, Jeddore Harbour, N.S.)
2115 (tagging, migrations, trap fishing, smolts, coho salmon, Vancouver I., B.C.)
2119 (stock assessment, potential yield, models, Pacific herring, B.C.)
2123 (fishery surveys, population structure, tagging, juveniles, sea scallop, N.S.)
2128 (sportfishing statistics, angling, catch/effort, chinook salmon, Fraser R., B.C.)
2130 (fishery management, life history, migrations, Greenland halibut, Cumberland Sound, N.W.T.)
2131 (resource conservation, habitat, inventories, marine fishes, Sooke Harbour, Vancouver I., B.C.)
2135 (by catch, prediction, bottom trawling, Pacific halibut, Hecate Strait, NE Pac.)
2136 (life history, population characteristics, stock assessment, alewife, blueback herring, rivers, N.S.)
2139 (fishery management, quota regulations, marine mammals, marine fishes, Arctic)
2143 (electric fishing, submersibles, design, manuals)
2144 (landing statistics, historical account, shellfish fisheries, B.C.)
2146 (stock assessment, population structure, prediction, Pacific herring, B.C.)
2147 (escapement, tagging, population structure, chinook salmon, Kitsumkalum R., B.C.)
2148 (landing statistics, catch/effort, stock assessment, sea scallop, Gulf of St. Lawrence)
2149 (computer programs, data collections, catch composition, American lobster, Scotia-Fundy Region, NW Atl.)
2152 (fishery surveys, escapement, resource conservation, chinook salmon, Harrison R., B.C.)
2154 (stock assessment, catch statistics, Iceland scallop, sea scallop, Nfld.)
2156F (stock assessment, geographical distribution, population structure, snow crab, Saguenay Fjord, Que.)
2164 (landing statistics, historical account, American lobster, Maritime Provinces, Que., Nfld.)

2165 (historical account, exploitation, fishery management, American lobster, SW N.S.)
2168 (tagging, escapement, stock assessment, chinook salmon, Wannock R., B.C.)
2172 (escapement, fish counters, hatcheries, chinook salmon, Stamp R., Robertson Creek, B.C.)
2173 (report literature, documents, DFO, Gulf Region, N.B.)
DF 786 (catchability, purse seining, sport fishing, coho salmon, chinook salmon, Saanich Inlet, B.C.)
831 (tagging, migrations, trap fishing, smolts, coho salmon, Lachmach R., B.C.)
833 (stock assessment, escapement, fall, sockeye salmon, Owikeno L., B.C.)
834 (fishery surveys, spawning populations, spawning grounds, chum salmon, Nekite R., B.C.)
844 (tagging, migrations, trap fishing, smolts, coho salmon, Lachmach R., Antigonish Creek, B.C.)
855 (catch statistics, biological data, gillnets, walleye, Heming L. area, Man.)
856 (catch composition, biological data, gillnets, freshwater fishes, Heming L., Man.)
858 (fishery management, echo surveys, escapement, sockeye salmon, Rivers Inlet, B.C.)
860 (sportfishing statistics, angling, resource depletion, Atlantic salmon, Maritime Provinces)
861 (fishery surveys, aerial photography, seining, evaluation, Arctic char, Dolly Varden, Firth R., Yuk., AK)
863 (fishery statistics, midwater trawls, Quesnel L., B.C.)
864 (fishery statistics, midwater trawls, freshwater lakes, sockeye salmon, Fraser R. drainage, B.C.)
865 (biological data, age composition, geographical distribution, Pacific herring, B.C.)
866 (fishery surveys, stock assessment, biological data, cruises, Hecate Strait, NE Pac.)
867 (stock assessment, biological data, fish counters, Meliadine R., N.W.T.)
870 (fishery surveys, fishways, PERT, Pacific salmons, steelhead trout, Meziadin R., B.C.)
871 (stock assessment, fish counters, juveniles, coho salmon, Lachmach R., B.C.)
872 (fishery surveys, fish counters, escapement, sockeye salmon, Docee R., B.C.)
874 (fishery management, stock identification, proteins, chum salmon, S B.C.)
878 (stock assessment, biological data, fish counters, Arctic char, Freshwater Creek, N.W.T.)
883 (fishery surveys, escapement, stock assessment, sockeye salmon, Owikeno L., B.C.)
886 (sportfishing statistics, catch/effort, aerial surveys, angling, Pacific salmons, char, sturgeon, Fraser R., B.C.)
893 (catch statistics, summaries, Atlantic salmon, Nfld., Labrador)
IF 213 (stock assessment, spawning populations, roe fisheries, Pacific herring, B.C.)
DH 111 (fishery surveys, biological data, oceanographic data, short-finned squid, S FL)
TS 5554 (quality control, processing fishery products, hygiene, Iceland)
5555 (fishery industry, fishery economics, processing fishery products, Norway)
5567 (product development, cured products, by catch, spiny dogfish, Germany, Norway)
5572 (catch statistics, fishery economics, fishery management, Norway)
5577 (gear selectivity, catchability, longlining, Atlantic cod, haddock, Norway)
EC 79 (economic analysis, exploitation, resource development, northern shrimp, Canada)
84F (fishery industry, economic analysis, fishery resources, Que.)
85 (fishery management, habitat, economic analysis, N.W.T., Yuk.)
88F (economic analysis, market research, landing statistics, snow crab, Que.)
105F (fishery statistics, fishery economics, fishery management, Gulf of St. Lawrence)
121F (economic analysis, landing statistics, marketing, sea scallop, Que.)
122 (fishery statistics, landing statistics, harvesting, Scotia-Fundy Region, NW Atl.)

FISHES (general)
J 49(1) : 116 (fishery resources, toxicity, aluminum, paleolimnology, Adirondack region, NY)
(3) : 523 (swimming, evaluation, stereocinematography)
(4) : 671 (habitat, species diversity, river basins, Vermilion R., IL)
(5) : 885 (environmental effects, light intensity, catchability, freshwater fishes, L. IJssel, Netherlands)
: 931 (models, exploitation, natural populations, cultured organisms)
: 1010 (mercury, bioaccumulation, tissues, marine fishes)
: 1018 (mathematical analysis, age determination, length, scales)
: 1176 (interspecific relationships,

avoidance reactions, predation, northern pike, Bolger Bog, MI)
: 1228 (models, growth, freshwater fishes, lakes, Ont., Man.)
(7) : 1366 (fishery data, trawling, models, demersal fishes, Bering Sea)
: 1417 (feeding behavior, diurnal variations, habitat selection, warmwater fishes, Vermilion R., IL)
: 1493 (species diversity, community composition, habitat selection, freshwater fishes, WI)
: 1507 (stock identification, tagging, methodology, marine fishes)
(9) : 1754 (recruitment, survival, distribution, numerical analysis, marine fishes)
: 1908 (food webs, trophic relationships, phytoplankton, plankton feeders)
(10) : 1990 (population density, body size, mortality, demersal fishes, Namibia)
: 2062 (parasitism, *Corynosoma wegeneri*, sealworm, demersal fishes, Scotian Shelf, NW Atl.)
: 2179 (stock assessment, echo surveys, vertical migrations, L. Memphremagog, Que.)
: 2196 (life history, species diversity, reproduction, North America)
(12) : 2648 (community composition, species diversity, trawling, demersal fishes, WA, OR)
TF 1788 (bibliographies, parthenogenesis, androgenesis)
1824 (bioaccumulation, mercury, impoundments, freshwater fishes, Southern Indian L., Issett L., Man.)
1829 (environmental monitoring, pulp wastes, mixed function oxygenases, procedures)
1836 (sex hormones, measurement, radioimmunoassay, freshwater fishes, Canada)
1863 : 106 (tumors, liver, environmental monitoring, water quality)
MF 2109 (sportfishing statistics, demersal fishes, Pacific salmons, Strait of Georgia, NE Pac.)
2131 (inventories, resource conservation, habitat, marine fishes, Sooke Harbour, Vancouver I., B.C.)
2139 (fishery management, quota regulations, marine fishes, Arctic)
2176 (environmental protection, herbicides, forest industry, freshwater fishes, B.C.)
DF 853 (feeding behavior, stomach content, Tuktoyaktuk Harbour, N.W.T.)
875 (biological data, catch composition, gillnets, freshwater fishes, Dauphin L., Man.)
TS 5554 (quality control, processing fishery products, hygiene, Iceland)
5558 (developmental stages, atlases, check lists, Japan)
5562 (embryonic development, environmental effects, water temperature, marine fishes)
5570 (aquaculture, nutritional requirements, lipids, Rep. China)
5578 (parasitism, lenitic environment, limnology, freshwater fishes, Kola Peninsula, Russia)

FLOATER, GIANT (*Anodonta grandis*)
TF 1863 : 325 (pollution effects, cadmium, biochemistry)

FLORIDA STATE, USA
J 49(3) : 577 (chemical limnology, removal, orthophosphates, peat, Everglades)
DH 111 (oceanographic data, biological data, fishery surveys, short-finned squid, S FL)

FLOUNDER, SUMMER (*Paralichthys dentatus*)
J 49(9) : 1856 (growth, age, otoliths, larvae, juveniles, NJ)

FLOUNDER, WINTER (*Pleuronectes americanus*) (*Pseudopleuronectes americanus*)
J 49(10) : 2190 (pollution effects, crude oil, sediments, sex hormones)

FLOUNDER, WITCH (*Glyptocephalus cynoglossus*)
J 49(2) : 238 (geographical distribution, eggs, spawning populations, Scotian Shelf, NW Atl.)
(3) : 467 (geographical distribution, dispersion, larvae, Grand Bank, NW Atl.)

FLOUNDER, YELLOWTAIL (*Pleuronectes ferrugineus*) (*Limanda ferruginea*)
J 49(3) : 467 (geographical distribution, dispersion, larvae, Grand Bank, NW Atl.)

FOOD AND FEEDING
J 49(1) : 73 (feeding behavior, prey selection, zooplankton, Atlantic herring, Baltic Sea, Gulf of Bothnia)
: 91 (check lists, benthos, prey selection, juveniles, haddock, Browns Bank, NW Atl.)
: 110 (feeding behavior, bioenergetics, controlled conditions, Danube bleak, nase)
: 159 (predation, genotypes, *Daphnia pulex*)
(2) : 368 (lipids, growth, survival, larvae, northern shrimp)
(3) : 540 (food webs, organic matter, forest streams, coho salmon, cutthroat trout, shorthead sculpin, Deschutes R., WA)
: 565 (feeding behavior, vertical distribution, pelagic environment, Aesop shrimp, Resolution I., E Hudson Strait, Arctic)
(4) : 644 (nutrition, sexual maturity, spawning populations, Baltic

herring, Archipelago Sea, Baltic Sea)
: 655 (diets, bioaccumulation, zinc, cadmium, *Limnesia maculata*, *Mystacides* spp.)
: 805 (feeding behavior, body size, ontogeny, alewife, yellow perch, bloater, Great Lakes, North America)
: 813 (feeding behavior, prey selection, larvae, golden shiner)
(5) : 894 (feeding behavior, prey selection, zander, L. IJssel, Netherlands)
: 1001 (feeding behavior, prey selection, models, brook trout, Que.)
(6) : 1216 (food webs, predation, zooplankton, gizzard shad, Kokosing L., OH)
: 1257 (food availability, competition, controlled conditions, caddisflies, club elimia)
(7) : 1328 (food consumption, approximation, methodology, brown trout)
: 1417 (feeding behavior, diurnal variations, habitat selection, warmwater fishes, Vermilion R., IL)
: 1455 (grazing, zooplankton, phytoplankton, models, freshwater lakes, CT, NY, PA)
: 1466 (plankton feeders, primary production, biomass, gizzard shad, bluegill)
(8) : 1570 (behavior, activity patterns, feeding experiments, larvae, turbot, Atlantic cod)
: 1588 (trophic relationships, food webs, pelagic environment, Oneida L., NY, L. St. George, Ont.)
: 1670 (feeding behavior, summer, models, chinook salmon, coho salmon, OR, WA)
: 1714 (trophic relationships, predation, rock bass, smallmouth bass, crayfish, MO)
: 1722 (trophic relationships, food webs, particulate organic carbon, gizzard shad, Sardis Reservoir, MS)
(9) : 1835 (feeding, reconditioning, captivity, kelt, Atlantic salmon)
: 1908 (food webs, trophic relationships, phytoplankton, plankton feeders)
: 1932 (feeding behavior, body size, abundance, zooplankton, yellow perch, L. Erie)
(10) : 1994 (feeding behavior, dominance hierarchies, Arctic grayling, rivers, AK)
: 1999 (feeding behavior, dominance hierarchies, models, Arctic grayling, rivers, AK)
: 2009 (plankton feeders, feeding behavior, alewife, *Bythotrephes cederstroemi*, L. Ontario)
: 2093 (food webs, trophic relationships, brook trout, rivers, Que.)
(11) : 2249 (feeding behavior, food webs, trophic relationships, white perch, Bay of Quinte, L. Ontario)
: 2267 (diets, bioenergetics, proteins, lipids, lake trout)
: 2322 (trophic relationships, food webs, community composition, streams, KY)
: 2354 (food webs, habitat improvement, Amphipoda, Trichoptera, oligotrophic lakes, Saqvaqjuac, N.W.T.)
(12) : 2469 (diets, putrescine, growth, rainbow trout)
: 2566 (feeding behavior, activity patterns, bioenergetics, brook trout)
: 2596 (nutrient recycling, bioenergetics, models, yellow perch, L. Memphremagog, Que.)
TF 1823 (environmental impact, reservoirs, northern pike, Wupaw Bay, Southern Indian L., Man.)
1831 : 107 (aquaculture techniques, food composition, nutritional requirements, Salmonidae)
: 125 (fish meal, nutritional requirements, aquaculture techniques, economics, Salmonidae)
1853 (competition, stomach content, sockeye salmon, Pitt L., B.C.)
1863 : 97 (bioaccumulation, mercury, common loon, lakes, Ont.)
MF 2141 (predators, chinook salmon, rainbow trout, northern squawfish, mountain whitefish, bull trout, Nechako R., B.C.)
DF 853 (feeding behavior, stomach content, fishes, Tuktoyaktuk Harbour, N.W.T.)
TS 5568 (prawn culture, nutritional requirements, lipids, fleshy prawn, Rep. China)
5570 (prawn culture, fish culture, nutritional requirements, lipids, Rep. China)
5576 (feeding experiments, digestibility, prawn culture, fleshy prawn)

FRANCE
TS 5561 (fishways, hydraulic structures, baffles)

G

Gadus morhua (*see* COD, ATLANTIC)

Gammarus fasciatus (*see* AMPHIPODA)
oceanicus (*see* AMPHIPODA)

Gaspereau (*see* ALEWIFE)

Gavia immer (*see* LOON, COMMON)

GENETICS
J 49(1) : 99 (population genetics, osmoregulation, sympatric populations, kokanee, sockeye salmon, Shuswap L., B.C.)
: 142 (genotypes, biological resistance, mercury, caddisflies)
: 147 (genotypes, biological resistance, mercury, caddisflies)
(2) : 266 (stock identification, meristic counts, morphology, American shad, Cumberland Basin, N.S.)
: 281 (population dynamics, models, fishery management, sockeye salmon)
: 319 (stock identification, DNA, cell organelles, walleye pollock, Bering Sea, Shelikof Strait, Gulf of Alaska, AK)
: 358 (stock identification, DNA, geographical isolation, environmental impact, white sturgeon, Fraser R., B.C.)
(4) : 760 (stock identification, evolution, Pleistocene, lake whitefish, Nahanni National Park, N.W.T.)
: 769 (stock identification, evolution, sympatric populations, Pleistocene, lake whitefish, E North America)
(7) : 1294 (genetic effects, body size, experimental fishing, catching methods, pink salmon, B.C.)
: 1305 (genetic effects, body size, catching methods, analysis, pink salmon, B.C.)
: 1501 (stock identification, new records, "quagga mussel", Great Lakes, North America)
: 1507 (stock identification, tagging, methodology, marine fishes)
(8) : 1650 (stock identification, DNA, electrophoresis, *Philonema*, B.C.)
(9) : 1770 (stock identification, population genetics, alewife, Great Lakes, North America)
: 1863 (stock identification, proteins, variations, Atlantic salmon, Scotland)
: 1902 (stock identification, DNA, cell organelles, lake herring, bloater, L. Superior, L. Ontario, North America, Susquehanna R., NY)
: 1953 (hybridization, natural populations, brown trout, Atlantic salmon, Nfld.)
: 1959 (stock identification, morphology, meristic counts, lake sturgeon, Lac Deux Montagnes, Que., St. Lawrence R.)
(11) : 2242 (stock identification, growth, otoliths, Atlantic mackerel, NW Atl.)
: 2300 (population genetics, life history, photoperiods, juveniles, chinook salmon)
: 2345 (phylogenetics, analytical techniques, DNA, Salmonidae)
: 2386 (stock identification, DNA, polymers, seamounts, slender armorhead, N Pac.)
: 2423 (stock identification, migrations, tagging, capelin, Nfld.)
(12) : 2527 (stock identification, DNA, biopolymorphism, haddock, NW Atl.)
: 2538 (stock identification, DNA, biopolymorphism, American plaice, Gulf of St. Lawrence)
: 2574 (stock identification, population genetics, biopolymorphism, northern quahog, ME, N.B., P.E.I.)
TF 1831 : 85 (aquaculture techniques, selective breeding, economics, Atlantic salmon)
: 93 (aquaculture techniques, selective breeding, Salmonidae, Norway)
1836 (sex hormones, measurement, radioimmunoassay, freshwater fishes, Canada)
1840 (population genetics, life history, population structure, sockeye salmon, B.C.)
1849 (stock identification, life history, population structure, sockeye salmon, B.C.)
DF 874 (stock identification, proteins, fishery management, chum salmon, S B.C.)

Georges Bank (*see* NORTHWEST ATLANTIC OCEAN)

Georgia, Strait of (*see* NORTHEAST PACIFIC OCEAN)

GERMANY
TS 5567 (product development, cured products, by catch, trade, spiny dogfish)

Glyptocephalus cynoglossus (*see* FLOUNDER, WITCH)

GOBY, ROUND (*Neogobius melanostomus*)
J 49(2) : 416 (introduced species, new records, geographical distribution, St. Clair R., North America)

GOBY, TUBENOSE (*Proterorhinus marmoratus*)
J 49(2) : 416 (introduced species, new records, geographical distribution, St. Clair R., North America)

Grand Bank (*see* NORTHWEST ATLANTIC OCEAN)

GRAYLING, ARCTIC (*Thymallus arcticus*)
J 49(5) : 1027 (recruitment, population number, stream flow, Chena R., AK)
(9) : 1890 (habitat improvement, fertilizers, growth, Kuparuk R., AK)
(10) : 1994 (feeding behavior, dominance hierarchies, rivers, AK)
: 1999 (feeding behavior, dominance

hierarchies, models, rivers, AK)

GREAT LAKES, NORTH AMERICA (*see also* names of lakes)
J 49(4) : 805 (feeding behavior, body size, ontogeny, alewife, yellow perch, bloater)
(7) : 1406 (bioenergetics, growth, zebra mussel)
: 1501 (new records, geographical distribution, stock identification, "quagga mussel")
(9) : 1770 (stock identification, population genetics, alewife)
TF 1813 (habitat improvement, spawning grounds, bibliographies, walleye, Salmonidae)
1822 (zooplankton, introduced species, monitoring, surface craft)
1865 (research programs, DFO, historical account)

GREENLAND
TF 1863 : 272 (bioaccumulation, chromium, marine organisms, Qaqortoq)

GRIBBLES (Crustacea)
SP 115 (boring organisms, biological damage, pest control, B.C.)

Gymnocephalus cernuus (*see* RUFFE)

H

HABITAT
J 49(3) : 540 (forest streams, food webs, organic matter, coho salmon, cutthroat trout, shorthead sculpin, Deschutes R., WA)
: 552 (habitat selection, models, evaluation, juveniles, cutthroat trout, Green R., Little Snake R., WY)
: 617 (lotic environment, colonization, invertebrates, World Inland Waters)
(4) : 671 (species diversity, river basins, warmwater fishes, Vermilion R., IL)
: 682 (habitat selection, habitat improvement, evaluation, coho salmon, cutthroat trout, Musqueam-Cutthroat Creek, B.C.)
: 783 (habitat selection, seasonal variations, juveniles, coho salmon, coastal zone, OR)
: 790 (habitat improvement, methodology, evaluation, juveniles, coho salmon, coastal zone, OR)
(6) : 1246 (geomorphology, deglaciation, Salmonidae, South Fork Stillaguamish R., WA)
(7) : 1389 (suspended responses, sublethal responses, coho salmon, Fraser R., B.C.)
: 1417 (habitat selection, feeding behavior, diurnal variations, warmwater fishes, Vermilion R., IL)
: 1478 (habitat selection, aggregations, migrations, coho salmon, Carnation Creek estuary, B.C.)
: 1493 (habitat selection, species diversity, community composition, freshwater fishes, WI)
(9) : 1778 (substrata, river discharge, environmental effects, population density, aquatic insects, Man.)
: 1873 (islands, river meanders, benthos, invertebrates, Ohio R., KY)
: 1890 (habitat improvement, fertilizers, growth, Arctic grayling, Kuparuk R., AK)
(11) : 2354 (habitat improvement, food webs, Amphipoda, Trichoptera, oligotrophic lakes, Saqvaqjuac, N.W.T.)
(12) : 2621 (life history, juveniles, chinook salmon, Situk R., AK)
(S1) : 122 (habitat selection, breeding sites, acidification, aquatic birds, lakes, Sudbury, Ont.)
TF 1797 (carrying capacity, evaluation, sockeye salmon, Pitt L., B.C.)
1813 (habitat improvement, spawning grounds, bibliographies, walleye, Salmonidae, Great Lakes, North America)
1827 (substrata, stability, hydrology, indicator species, aquatic invertebrates, Rangitukia Stream, Stony Stream, New Zealand)
1830F (environmental impact, commercial fishing, St. Lawrence R., Gulf of St. Lawrence)
1887 (habitat requirements, environmental effects, life history, American lobster)
MF 2131 (inventories, resource conservation, marine fishes, Sooke Harbour, Vancouver I., B.C.)
2163 (habitat improvement, environmental surveys, rivers, methodology)
2176 (environmental protection, herbicides, forest industry, freshwater fishes, B.C.)
TS 5557 (ecosystems, environmental capacity)
EC 85 (habitat management, fishery management, economic analysis, N.W.T., Yuk.)

HADDOCK (*Melanogrammus aeglefinus*)
J 49(1) : 23 (echo surveys, population density, fishery management, Scotian Shelf, NW Atl.)
: 91 (check lists, benthos, prey selection, juveniles, Browns Bank, NW Atl.)
(2) : 238 (geographical distribution, eggs, spawning populations, Scotian Shelf, NW Atl.)
(3) : 484 (recruitment, dispersion,

larvae, Georges Bank, NW Atl.)
(11) : 2222 (dispersion, stock assessment, population dynamics, Scotian Shelf, NW Atl.)
(12) : 2527 (stock identification, DNA, biopolymorphism, NW Atl.)
TS 5577 (gear selectivity, catchability, longlining, Norway)

HAKE, PACIFIC (*Merluccius productus*)
J 49(4) : 708 (length, abundance, migrations, models, Vancouver I., B.C.)
(8) : 1657 (population structure, population factors, models)

HALIBUT, ATLANTIC (*Hippoglossus hippoglossus*)
J 49(4) : 754 (sexual maturity, sex hormones, seasonal variations, Nfld.)

HALIBUT, GREENLAND (*Reinhardtius hippoglossoides*)
MF 2130 (life history, migrations, Cumberland Sound, N.W.T.)

HALIBUT, PACIFIC (*Hippoglossus stenolepis*)
MF 2135 (by catch, prediction, bottom trawling, Hecate Strait, NE Pac.)

Haliotis kamtschatkana (*see* ABALONE, PINTO)

Hecate Strait (*see* NORTHEAST PACIFIC OCEAN)

HERRING, ATLANTIC (*Clupea harengus*)
J 49(1) : 73 (feeding behavior, prey selection, zooplankton, Baltic Sea, Gulf of Bothnia)
(10) : 2045 (fecundity, egg weight, reproductive organs, NW Atl.)
: 2104 (mesh selectivity, trawling, evaluation, Baltic Sea)
TS 5580(2) (population characteristics, seasonal variations, migrations, Kiel Bay, Baltic Sea)

HERRING, BALTIC (*Clupea harengus membras*)
J 49(4) : 644 (sexual maturity, spawning populations, nutrition, Archipelago Sea, Baltic Sea)

HERRING, BLUEBACK (*Alosa aestivalis*)
MF 2136 (life history, population characteristics, stock assessment, rivers, N.S.)

HERRING, LAKE (*Coregonus artedi*) (cisco)
J 49(9) : 1902 (stock identification, DNA, cell organelles, L. Superior, L. Ontario, North America, Susquehanna R., NY)
DF 875 (biological data, catch composition, gillnets, Dauphin L., Man.)

HERRING, PACIFIC (*Clupea pallasi*)
J 49(5) : 967 (methodology, measurement, RNA, DNA, larvae)
MF 2119 (stock assessment, potential yield, models, B.C.)
2146 (stock assessment, population structure, prediction, B.C.)
DF 865 (biological data, age composition, geographical distribution, B.C.)
IF 213 (stock assessment, spawning populations, roe fisheries, B.C.)

Hexagenia rigida (*see* MAYFLY, BURROWING)

Hippoglossoides platessoides (*see* PLAICE, AMERICAN)

Hippoglossus hippoglossus (*see* HALIBUT, ATLANTIC)
stenolepis (*see* HALIBUT, PACIFIC)

HISTORICAL ACCOUNT
J 49(8) : 1734 (community composition, abundance, zooplankton, L. Michigan)
TF 1831 : 1 (aquaculture development, potential yield, Atlantic salmon, Norway)
: 9 (aquaculture development, economics, Atlantic salmon, Scotland)
: 21 (aquaculture development, temperature effects, Atlantic salmon, Atl. Canada, ME)
: 37 (aquaculture development, potential yield, Salmonidae, B.C.)
: 51 (aquaculture development, economics, Salmonidae, Chile)
: 65 (aquaculture development, potential yield, Salmonidae, Tasmania, Australia)
1847 (fishery development, snow crab, SW Gulf of St. Lawrence)
1865 (research programs, DFO, Great Lakes, North America)
1885 (environmental conditions, pollutants, East coast, NW Atl.)
MF 2134 (flow simulation, measuring devices, DFO, St. Andrews, N.B.)
2144 (landing statistics, shellfish fisheries, B.C.)
2164 (landing statistics, American lobster, Maritime Provinces, Que., Nfld.)
2165 (exploitation, fishery management, American lobster, SW N.S.)
EC 122 (fishery statistics, landing statistics, Scotia-Fundy Region, NW Atl.)

Homarus americanus (*see* LOBSTER, AMERICAN)

Hoplostethus atlanticus (*see* ROUGHY, ORANGE)

HUDSON BAY, CANADA
DH 113F (current meter data, meteorological data, winter)

Hudson Strait (*see* ARCTIC)

HURON, LAKE, NORTH AMERICA
J 49(2) : 379 (picoplankton, phototropism, production, biomass)

Hyalella azteca (*see* AMPHIPODA)

Hydropsyche slossonae (*see* TRICHOPTERA)

I

ICELAND
TS 5554 (quality control, processing fishery products, hygiene)

Ictalurus punctatus (*see* CATFISH, CHANNEL)

Illex illecebrosus (*see* SQUID, SHORT-FINNED)

ILLINOIS STATE, USA
J 49(4) : 671 (habitat, species diversity, river basins, warmwater fishes, Vermilion R.)
(7) : 1417 (feeding behavior, diurnal variations, habitat selection, warmwater fishes, Vermilion R.)

INDIAN OCEAN
TS 5553 (new species, taxonomy, parasites, *Bolbosoma tuberculata*)

INFORMATION SERVICES
J 49(1) : 91 (check lists, benthos, prey selection, juveniles, haddock, Browns Bank, NW Atl.)
(4) : 663 (check lists, zooplankton, sediment traps, winter)
(5) : 903 (check lists, biomass, seasonal variations, zooplankton, continental shelf, B.C.)
: 1035 (check lists, species composition, zooplankton, L. Winnipeg, Man.)
(9) : 1778 (check lists, species composition, population density, aquatic insects, Man.)
TF 1741F (models, fishery statistics, catch/effort)
1788 (bibliographies, parthenogenesis, androgenesis, fishes)
1807 (manuals, data collections, computer programs, commercial fishing, Pacific salmons)
1813 (bibliographies, habitat improvement, spawning grounds, walleye, Salmonidae, Great Lakes, North America)
1825 (check lists, geographical distribution, environmental effects, rotifers, crustaceans, lakes, Nfld.)
1848 (manuals, computer programs, chemical speciation, algorithms)
1851F (inventories, chlorine compounds, sediments, Laurentian Trough, St. Lawrence R. estuary)
1882 (economic analysis, shellfish closures, bacterial diseases, Mollusca, P.E.I.)
MF 2127 (check lists, benthos, molluscs, L. Winnipeg, Man.)
2143 (manuals, design, submersibles, electric fishing)
2173 (documents, report literature, DFO, Gulf Region, N.B.)
2176 (environmental protection, herbicides, forest industry, habitat, freshwater fishes, B.C.)
DF 868 (check lists, seasonal distribution, abundance, Crustacea, L. Winnipeg, Man.)
869 (check lists, abundance, seasonal distribution, Oligochaeta, L. Winnipeg, Man.)
TH 82 (bibliographies, documents, BIO, N.S.)
138 (manuals, computer programs, titration, dissolved oxygen)
139 (check lists, taxonomy, phytoplankton, Esquimalt Lagoon, B.C.)
DH 5(20:1) (inventories, chemical oceanography, chemical components, Beaufort Sea)
(20:2) (inventories, chemical oceanography, chemical components, Beaufort Sea)
(22) (inventories, chemical oceanography, chemical components, Northwest Passage)
32(4) (inventories, oil and gas industry, drilling fluids, hydrocarbons, Beaufort Sea, Arctic Is., Davis Strait)
105 (atlases, oceanographic data, ice conditions, Newfoundland Shelf, Grand Bank, NW Atl.)
TS 5558 (check lists, atlases, developmental stages, fishes, Japan)
5575 (literature reviews, processing fishery products, enzymatic activity, raw materials)

INTRODUCED SPECIES
J 49(1) : 150 (population dynamics, mathematical models, zebra mussel, lakes, North America)
(2) : 406 (mapping, dispersion, zebra mussel, lakes, Ont.)
: 416 (new records, geographical distribution, tubenose goby, round goby, St. Clair R., North America)
: 422 (new records, geographical distribution, zooplankton, *Bythotrephes cederstroemi*, Muskoka, Ont.)
(7) : 1501 (new records, geographical distribution, stock identification, "quagga mussel", Great Lakes, North America)
(8) : 1616 (new records, ruffe, St. Louis R., L. Superior)
TF 1822 (zooplankton, monitoring, surface craft, Great Lakes, North America, St. Lawrence R.)
1867 (ballast tanks, risks, endemic species, conferences, Canada)

INVERTEBRATA (*see also* names of organisms)
J 49(1) : 159 (predation, *Chaoborus americanus*,

Daphnia pulex)
(2) : 422 (introduced species, new records, geographical distribution, zooplankton, *Bythotrephes cederstroemi*, Muskoka, Ont.)
(3) : 532 (production, biomass, regression analysis, running water)
: 617 (colonization, lotic environment, environmental effects, World Inland Waters)
(4) : 655 (bioaccumulation, zinc, cadmium, diets, *Limnesia maculata*, *Mystacides* spp.)
: 735 (bioavailability, dioxins, enclosures, Experimental Lakes Area, NW Ont.)
(5) : 1010 (mercury, bioaccumulation, tissues, marine invertebrates)
(6) : 1118 (embryonic development, temperature effects, models, *Bythotrephes cederstroemii*)
: 1142 (metabolism, measurement, respirometers)
(8) : 1686 (pollution effects, heavy metals, benthos, Clinch R., VA)
(9) : 1873 (benthos, islands, river meanders, Ohio R., KY)
(10) : 2009 (plankton feeders, feeding behavior, alewife, *Bythotrephes cederstroemi*, L. Ontario)
(S1) : 63 (environmental impact, pollution control, acidification, benthos, lakes, Sudbury, Ont.)
TF 1814 (environmental impact, hydroelectric power, abundance, population structure, macroinvertebrates, Playgreen L., Kiskittogisu L., Man.)
1827 (indicator species, substrata, stability, hydrology, aquatic invertebrates, Rangitukia Stream, Stony Stream, New Zealand)
TS 5560 (secondary production, biomass, regression analysis, lotic environment, benthic invertebrates)

J

JAPAN
J 49(8) : 1573 (stocking, economic analysis, landing statistics, commercial fisheries)
(9) : 1706 (fishery management, harvesting, resource conservation, chub mackerel)
(11) : 2307 (migrations, deep water, geographical distribution, chum salmon, Iwate Prefecture)
: 2373 (crab culture, disease control, bacteria, [swimming] crab)
TF 1831 : 153 (aquaculture products, marketing, economics, Salmonidae)
TS 5558 (developmental stages, atlases, check lists, fishes)
5571 (market research, fish consumption, trade, Salmonidae)

JAPAN, SEA OF
TS 5559 (moulting, males, snow crab)

K

KENTUCKY STATE, USA
J 49(9) : 1873 (islands, river meanders, benthos, invertebrates, Ohio R.)
(11) : 2322 (trophic relationships, food webs, community composition, streams)

KIEL BAY, BALTIC SEA
TS 5580(2) (population characteristics, seasonal variations, migrations, Atlantic herring)

KOKANEE (*Oncorhynchus nerka*)
J 49(1) : 99 (osmoregulation, population genetics, sympatric populations, sockeye salmon, Shuswap L., B.C.)

L

LABRADOR, NFLD.
J 49(5) : 956 (parasites, stomach, nematodes, harp seal)
(12) : 2635 (parasites, muscles, *Anisakis simplex*, Atlantic cod)
DF 893 (catch statistics, summaries, Atlantic salmon)
TH 141 (sea ice, oceanographic data, meteorological data)

Lake...(*see* name of lake)

LEECH (*Nephelopsis obscura*)
J 49(8) : 1583 (bioenergetics, environmental effects, overwintering)

Lepomis macrochirus (*see* BLUEGILL)

Leptasterias polaris (*see* STARFISH, POLAR)

Limanda ferruginea (*see* FLOUNDER, YELLOWTAIL)

Limnesia maculata (*see* INVERTEBRATA)

Limnodrilus sp. (*see* OLIGOCHAETA)

LINGCOD (*Ophiodon elongatus*)
MF 2106 (fishery surveys, seiners, stock assessment, Strait of Georgia, NE Pac.)

LOBSTER, AMERICAN (*Homarus americanus*)
J 49(6) : 1114 (spawning, seasonal variations, environmental effects)
(7) : 1486 (environmental impact, scallop fisheries, injuries, N.S.)
TF 1801 (fishery surveys, geographical distribution, larvae, Scotian Shelf, NW Atl.)
1887 (life history, habitat, environmental effects)
MF 2110 (fishery surveys, spatial distribution, larvae, Jeddore Harbour, N.S.)
2149 (computer programs, data collections, catch composition,

Scotia-Fundy Region, NW Atl.)
2164 (landing statistics, historical account, Maritime Provinces, Que., Nfld.)
2165 (historical account, exploitation, fishery management, SW N.S.)

LOON, COMMON (*Gavia immer*)
TF 1863 : 87 (bioaccumulation, mercury, indicator species, lakes, Ont.)

Lumbriculus variegatus (*see* OLIGOCHAETA)

M

MACKEREL, ATLANTIC (*Scomber scombrus*)
J 49(11) : 2232 (migrations, echo surveys, advection, Brador Bay, Gulf of St. Lawrence)
: 2242 (stock identification, growth, otoliths, NW Atl.)

MACKEREL, CHUB (*Scomber japonicus*)
J 49(9) : 1796 (fishery management, harvesting, resource conservation, Japan)

MAINE STATE, USA
J 49(12) : 2574 (stock identification, population genetics, biopolymorphism, northern quahog)
TF 1831 : 21 (aquaculture development, temperature effects, historical account, Atlantic salmon)

Mallotus villosus (*see* CAPELIN)

MANITOBA (PROVINCE), CANADA
J 49(5) : 1035 (species composition, spatial variations, temporal variations, zooplankton, L. Winnipeg)
(6) : 1228 (models, growth, freshwater fishes, lakes)
(9) : 1778 (environmental effects, river discharge, species composition, population density, aquatic insects)
TF 1794 (environmental impact, flood control, resource harvesting, L. Winnipeg, Churchill R.)
1806 (flood control, hydrology, fisheries, L. Winnipeg, Churchill R.)
1814 (environmental impact, hydroelectric power, abundance, population structure, macroinvertebrates, Playgreen L., Kiskittogisu L.)
1823 (environmental impact, reservoirs, feeding behavior, reproduction, northern pike, Southern Indian L., Wupaw Bay)
1824 (bioaccumulation, mercury, impoundments, freshwater fishes, Southern Indian L., Issett L.)
1837 (abundance, environmental impact, environmental effects, burrowing mayfly, Southern Indian L.)
1838 (conferences, environmental impact, hydroelectric power, white whale, Nelson R. estuary)
1841 (fish culture, production, abundance, zooplankton, walleye, Methley Beach, Dauphin L.)
MF 2127 (abundance, geographical distribution, check lists, molluscs, L. Winnipeg)
DF 855 (catch statistics, biological data, gillnets, walleye, Heming L. area)
856 (catch composition, biological data, gillnets, freshwater fishes, Heming L.)
868 (check lists, seasonal distribution, abundance, Crustacea, L. Winnipeg)
869 (check lists, abundance, seasonal distribution, Oligochaeta, L. Winnipeg)
875 (biological data, catch composition, gillnets, freshwater fishes, Dauphin L.)

MAPLE, SUGAR (*Acer saccharum*)
J 49(9) : 1916 (pollution effects, acidification, decomposition, Adirondack region, NY)

Margariscus margarita (*see* DACE, PEARL)

MARINE MAMMALS (*see also* names of species)
MF 2139 (fishery management, quota regulations, Arctic)

MARINE ORGANISMS
TF 1863 : 175 (toxicity, dispersants, oil removal, models)
: 272 (bioaccumulation, chromium, Qaqortoq, Greenland)

MARITIME PROVINCES (*see also* NEW BRUNSWICK; NOVA SCOTIA; PRINCE EDWARD ISLAND)
MF 2164 (landing statistics, historical account, American lobster)
DF 860 (sportfishing statistics, angling, resource depletion, Atlantic salmon)
EC 33 (aquaculture, economics, marketing, Atlantic salmon)

MAYFLY, BURROWING (*Hexagenia rigida*)
TF 1837 (abundance, environmental effects, environmental impact, Southern Indian L., Man.)

Melanogrammus aeglefinus (*see* HADDOCK)

Mercenaria mercenaria (*see* QUAHOG, NORTHERN)

Merluccius productus (*see* HAKE, PACIFIC)

METEOROLOGY
TH 132 (water temperature, coastal oceanography, monitoring, NW Atl.)
141 (meteorological data, sea ice, Nfld., Labrador)

DH 85 (climate data, surface temperature, satellite sensing, NW Atl.)
86 (surface temperature, satellite sensing, maps, NW Atl.)
87 (surface temperature, satellite sensing, maps, NW Atl.)
88 (surface temperature, satellite sensing, maps, NW Atl.)
89 (surface temperature, satellite sensing, maps, NW Atl.)
113F (meteorological data, winter, Hudson Bay, Canada)

METHODOLOGY AND TECHNIQUES
J 49(1) : 32 (mapping, biomass, northern shrimp, Gulf of St. Lawrence)
: 78 (photographs, population structure, females, juveniles, sperm whale, Galapagos Is., Ecuador)
(3) : 453 (telemetry, swimming, marine environment, coho salmon, N Pac.)
: 523 (stereocinematography, evaluation, swimming, fishes)
(4) : 701 (growth rate, scales, osseoid layer)
: 780 (marking, strontium, scales, juveniles, cutthroat trout)
: 790 (habitat improvement, evaluation, juveniles, coho salmon, coastal zone, OR)
(5) : 922 (methodology, mathematical analysis, stock assessment, orange roughy, Chatham Rise, New Zealand)
: 967 (measurement, RNA, DNA, larvae, Pacific herring)
: 975 (regression analysis, phosphorus, eutrophication, freshwater lakes)
: 1010 (mercury, bioaccumulation, tissues, marine fishes, marine invertebrates)
: 1018 (mathematical analysis, age determination, length, scales, fishes)
(6) : 1142 (respirometers, metabolism, measurement, invertebrates)
: 1171 (models, trophic status, indicator species, diatoms, freshwater lakes, Canada)
(7) : 1328 (methodology, approximation, food consumption, brown trout)
: 1439 (back calculation, growth, otoliths, larvae, striped bass)
: 1507 (tagging, evaluation, stock identification, marine fishes)
(8) : 1624 (graphs, gear selectivity, trawl nets)
(9) : 1826 (tags, survival, turbines, American shad)
: 1856 (growth, age, otoliths, larvae, juveniles, summer flounder, NJ)
(10) : 1982 (methodology, escapement, spawning populations, Salmonidae, rivers, B.C.)
(11) : 2331 (chromatographic techniques, chemical extraction, chlorophylls)
: 2345 (analytical techniques, phylogenetics, DNA, Salmonidae)
TF 1768 (analysis, fishery products, food composition, *Escherichia coli*)
1785 (aquaculture techniques, sterility, polyploids, coho salmon)
1798 (methodology, stock assessment, abundance, sockeye salmon, Henderson L., Vancouver I., B.C.)
1821 (videotape recordings, underwater visibility, evaluation, aquatic organisms)
1829 (procedures, environmental monitoring, pulp wastes, mixed function oxygenases, fishes)
1836 (sex hormones, measurement, radioimmunoassay, freshwater fishes, Canada)
1840 (graphic methods, computers, acoustic data)
1863 : 169 (toxicity tests, environmental monitoring, aquatic plants)
: 222 (toxicity tests, sediments, marine environment, brackishwater environment, Amphipoda, Canada coasts)
MF 2121 (lasers, measurement, growth, blue mussel)
2134 (measuring devices, flow simulation, historical account, DFO, St. Andrews, N.B.)
2143 (electric fishing, submersibles, design, manuals)
2163 (methodology, habitat improvement, environmental surveys, rivers)
TH 136 (acoustic equipment, position fixing, evaluation)
138 (manuals, computer programs, titration, dissolved oxygen)
139 (radar, ice thickness, snow, Beaufort Sea Shelf)
DH 103F (pollution, hydrocarbons, sediments, St. Lawrence R.)
110 (current meters, measurement, vertical mixing, oceanographic data, Georges Bank, NW Atl.)
CH 41 (electromagnetism, sea ice thickness, measurement, Nfld.)
TS 5550 (mass spectroscopy, resonance frequency, organic compounds)
5573 (organoleptic properties, quality control, tests, flying squid)

MICHIGAN, LAKE, USA
J 49(2) : 379 (picoplankton, phototropism, production, biomass)
(8) : 1734 (community composition, historical account, abundance, zooplankton)

MICHIGAN STATE, USA
J 49(6) : 1176 (interspecific relationships, avoidance reactions, predation, northern pike, freshwater fishes, Bolger Bog)
(8) : 1633 (toxicity tests, bicarbonates,

pore water, cladocerans, Grand Calumet R.)

Microarthridion littorale (*see* CRUSTACEA)

Micropterus dolomieu (*see* BASS, SMALLMOUTH)
salmoides (*see* BASS, LARGEMOUTH)

Microstomus pacificus (*see* SOLE, DOVER)

MIGRATIONS AND TAGGING
J 49(2) : 259 (local movements, seasonal variations, body size, larvae, caddisflies)
(3) : 432 (tagging, evaluation, statistical analysis)
(4) : 694 (vertical migrations, phosphorus, primary production, *Ceratium hirundinella*, Eau Galle Reservoir, WI)
: 708 (migrations, abundance, summer, length, Pacific hake, Vancouver I., B.C.)
: 780 (marking, strontium, scales, juveniles, cutthroat trout)
(6) : 1137 (vertical migrations, diurnal variations, predation, Pacific sand lance, *Pseudocalanus newmani*, Dabob Bay, WA)
(7) : 1474 (tagging, age determination, growth, sandbar shark, NW Atl.)
: 1478 (migrations, aggregations, habitat selection, coho salmon, Carnation Creek estuary, B.C.)
: 1507 (tagging, methodology, stock identification, marine fishes)
(9) : 1816 (tagging, models, hatcheries, coho salmon)
: 1826 (tags, survival, turbines, American shad)
: 1843 (homing behavior, straying, coho salmon, Vancouver I., B.C.)
(10) : 1972 (escapement, spawning populations, coho salmon, rivers, B.C.)
: 2179 (vertical migrations, echo surveys, stock assessment, fishes, L. Memphremagog, Que.)
(11) : 2232 (migrations, echo surveys, advection, Atlantic mackerel, Brador Bay, Gulf of St. Lawrence)
: 2307 (migrations, deep water, geographical distribution, chum salmon, Iwate Prefecture, Japan)
: 2377 (migrations, primary production, limiting factors, Pacific salmons, tributaries, L. Ontario)
: 2423 (stock identification, capelin, Nfld.)
(12) : 2621 (life history, habitat, juveniles, chinook salmon, Situk R., AK)
TF 1811 (migrations, broad whitefish, lake whitefish, least cisco, Kukjuktuk Creek, N.W.T.)
1856 (tags, evaluation, white whale)
1858 (tagging, computer programs, data collections, coastal fisheries, Salmonidae, B.C.)
MF 2115 (tagging, trap fishing, smolts, coho salmon, Vancouver I., B.C.)
2123 (tagging, fishery surveys, juveniles, sea scallop, N.S.)
2125 (tagging, sonic tags, Arctic cisco, SE Beaufort Sea)
2130 (migrations, life history, Greenland halibut, Cumberland Sound, N.W.T.)
2147 (tagging, escapement, chinook salmon, Kitsumkalum R., B.C.)
2168 (tagging, escapement, stock assessment, chinook salmon, Wannock R., B.C.)
2172 (fish counters, escapement, hatcheries, chinook salmon, Stamp R., Robertson Creek, B.C.)
DF 831 (tagging, trap fishing, smolts, coho salmon, Lachmach R., B.C.)
844 (tagging, trap fishing, smolts, coho salmon, Lachmach R., Antigonish Creek, B.C.)

MINNESOTA STATE, USA
J 49(2) : 293 (population dynamics, interspecific relationships, commercial fishing, walleye, yellow perch, freshwater drum, Red L.)

MINNOW, EURASIAN (*Phoxinus phoxinus*)
J 49(10) : 2070 (toxicity, cadmium, zinc, juveniles)

MINNOW, FATHEAD (*Pimephales promelas*)
J 49(10) : 2080 (PCBs, bioaccumulation, pollution indicators, sediments)
DF 846 (pollution effects, length, acidification, Experimental Lakes Area, NW Ont.)

MISSISSIPPI STATE, USA
J 49(8) : 1722 (trophic relationships, food webs, particulate organic carbon, Sardis Reservoir)

MISSOURI STATE, USA
J 49(6) : 1198 (biomass, nutrient enrichment, floods, periphyton, Ozark Plateau)
(8) : 1714 (trophic relationships, predation, rock bass, smallmouth bass, crayfish)

MODELS
J 49(1) : 2 (variance analysis, weight, controlled conditions, rainbow trout, Arctic char)
: 150 (population dynamics, introduced species, zebra mussel, lakes, North America)
(2) : 210 (fecundity, recruitment, fishery management)
: 281 (genetics, population dynamics,

fishery management, sockeye salmon)
: 327 (parasitism, fishery management, Crustacea)
: 337 (limnology, detritus, dynamics, streams, Malcolm Knapp Research Forest, B.C.)
: 400 (bioaccumulation, domoic acid, blue mussel, Cardigan Bay, P.E.I.)
(3) : 497 (fishery economics, quota regulations, rent)
: 532 (production, biomass, regression analysis, running water, invertebrates)
: 552 (habitat selection, evaluation, juveniles, cutthroat trout, Green R., Little Snake R., WY)
: 597 (regression analysis, yield predictions, chemical limnology, brook trout, lakes, Adirondack region, NY)
(4) : 632 (length, age, Pacific ocean perch)
: 708 (length, abundance, migrations, Pacific hake, Vancouver I., B.C.)
(5) : 931 (exploitation, natural populations, cultured organisms, fishes)
: 1001 (feeding behavior, prey selection, brook trout, Que.)
(6) : 1086 (bioenergetics, mercury, PCBs, DDE, lake trout)
: 1118 (embryonic development, temperature effects, *Bythotrephes cederstroemii*)
: 1171 (trophic status, indicator species, diatoms, freshwater lakes, Canada)
: 1228 (growth, freshwater fishes, lakes, Ont., Man.)
(7) : 1315 (catch/effort, catch statistics, Pacific ocean perch)
: 1366 (demersal fisheries, fishery data, trawling, Bering Sea)
: 1396 (evaluation, fishery management, South African fur seal, South Africa)
: 1406 (bioenergetics, growth, zebra mussel, Great Lakes, North America)
: 1455 (zooplankton, grazing, phytoplankton, freshwater lakes, CT, NY, PA)
(8) : 1546 (catchability, gear selectivity, gillnets, brown trout, L. Løyning, Norway)
: 1657 (population structure, population factors, Pacific hake)
: 1670 (feeding behavior, summer, chinook salmon, coho salmon, OR, WA)
(9) : 1754 (recruitment, survival, distribution, marine fishes)
: 1801 (statistical models, ageing, errors, walleye pollock)
: 1816 (tagging, hatcheries, coho salmon)
(10) : 1999 (feeding behavior, dominance hierarchies, Arctic grayling, rivers, AK)
: 2020 (variance analysis, recruitment, mortality, fishery management)
(11) : 2313 (fishery economics, fishery management, quota regulations, sablefish, N Pac.)
: 2337 (survival, sediment transport, embryos, Salmonidae)
: 2363 (oxygen profiles, hypolimnion, prediction, oligotrophic lakes)
(12) : 2483 (aquatic plants, water currents, sediments, clays, L. Memphremagog, Que.)
: 2490 (sediment distribution, wave motion, lakes)
: 2515 (aerial surveys, stock assessment, data acquisition, northern anchovy)
: 2551 (predation, juveniles, Pacific salmons, squawfish, Columbia R., WA)
: 2596 (nutrient recycling, bioenergetics, yellow perch, L. Memphremagog, Que.)
: 2611 (colonization, limiting factors, lakes, zebra mussel)
TF 1741F (fishery statistics, catch/effort)
1863 : 175 (toxicity tests, dispersants, oil removal, marine organisms)
1892 (economic models, commercial fishing, fishery policy, Nfld.)
MF 2119 (stock assessment, potential yield, Pacific herring, B.C.)
2146 (age-structured analysis, stock assessment, prediction, Pacific herring, B.C.)
TH 140 (conferences, oceanography, sea ice, wave motion, World Oceans)
TS 5560 (secondary production, biomass, regression analysis, lotic environment, benthic invertebrates)

MOLLUSCA (*see also* names of species)
SP 115 (boring organisms, biological damage, pest control, shipworms, B.C.)
TF 1882 (economic analysis, shellfish closures, bacterial diseases, P.E.I.)
MF 2127 (abundance, geographical distribution, check lists, L. Winnipeg, Man.)

Morone americana (*see* PERCH, WHITE)
saxatilis (*see* BASS, STRIPED)

MORPHOLOGY AND TAXONOMY
J 49(1) : 166 (pollution effects, pulp wastes, skull, northern pike, Gulf of Bothnia, Baltic Sea)
(2) : 266 (meristic counts, morphology, stock identification, American shad, Cumberland Basin, N.S.)
: 303 (morphology, plankton, domoic acid, *Nitzschia pungens* f. *multiseries*, P.E.I.)

(4) : 795 (morphology, otoliths, regional variations, ruby snapper, S Pac.)
(6) : 1184 (taxonomy, pollution detection, macrobenthos, Puget Sound, WA)
: 1268 (regeneration, limbs, bioassays)
(8) : 1619 (ecdysones, sexual maturity, males, snow crab)
(9) : 1959 (stock identification, morphology, meristic counts, lake sturgeon, Lac Deux Montagnes, Que., St. Lawrence R.)
(12) : 2460 (morphology, sexual maturity, reproductive organs, males, snow crab)
SP 115 (boring organisms, shipworms, gribbles, B.C.)
TF 1886F (morphology, shells, decalcification, snow crab, Gulf of St. Lawrence)
TH 103 (taxonomy, microplankton, fossils, dinoflagellates, Rep. China)
139 (taxonomy, check lists, phytoplankton, Esquimalt Lagoon, B.C.)
TS 5552 (taxonomy, monorchism, parasites, *Bolbosoma porta*)
5553 (taxonomy, new species, parasites, *Bolbosoma tuberculata*, S Atl., Indian Ocean)
5558 (developmental stages, atlases, check lists, fishes, Japan)
5563 (parasites, lungs, new species, *Parafilaroides krascheninnikovi*, ringed seal, Chuckchee Sea, Bering Sea)
5564 (taxonomy, new species, parasites, *Parafilaroides arcticus*, ringed seal, Chuckchee Sea)

MOSS, IRISH (*Chondrus crispus*)
J 49(2) : 349 (environmental impact, harvesting, frond density, biomass, S Gulf of St. Lawrence)

Moxostoma macrolepidotum (*see* REDHORSE, SHORTHEAD)

MUSSEL, BLUE (*Mytilus edulis*)
J 49(2) : 312 (depuration, toxicity, domoic acid, P.E.I.)
: 400 (bioaccumulation, domoic acid, models, Cardigan Bay, P.E.I.)
(6) : 1163 (growth, shells, environmental factors)
MF 2121 (environmental impact, suspended sediment, growth, measurement)

Mussel, freshwater (*see* FLOATER, GIANT)

"MUSSEL, QUAGGA" (Dreissenidae)
J 49(7) : 1501 (new records, geographical distribution, stock identification, Great Lakes, North America)

MUSSEL, ZEBRA (*Dreissena polymorpha*)
J 49(1) : 150 (population dynamics, models, introduced species, lakes, North America)
(2) : 406 (mapping, dispersion, lakes, Ont.)
(7) : 1406 (bioenergetics, growth, models, Great Lakes, North America)
(12) : 2611 (colonization, limiting factors, models, lakes)

MUSSELS
J 49(5) : 985 (aggregations, population number, fresh water)

Mya arenaria (*see* SOFTSHELL)

MYSIDACEA
J 49(3) : 513 (new records, hosts, sealworm, *Neomysis americana*, ponds, Wallace L., Sable I., N.S.)

Mysis relicta (*see* SHRIMP, OPOSSUM)

Mystacides spp. (*see* INVERTEBRATA)

Mytilus edulis (*see* MUSSEL, BLUE)

MYXOSPOREA (myxosporeans)
J 49(9) : 1883 (parasites, mortality causes, juveniles, chinook salmon, *Ceratomyxa shasta*, Fraser R., B.C.)

N

NAMIBIA
J 49(10) : 1990 (population density, body size, mortality, demersal fishes)

NASE (*Chondrostoma nasus*)
J 49(1) : 110 (bioenergetics, swimming, feeding behavior, controlled conditions)

Nectopsyche albida (*see* TRICHOPTERA)

NEMATODA (roundworms)
J 49(2) : 347 (parasites, laboratory culture, development, Atlantic cod, *Contracaecum osculatum*)
(3) : 513 (parasitism, hosts, *Neomysis americana*, *Gammarus oceanicus*, sealworm, Wallace L., Sable I., N.S.)
(5) : 956 (parasites, stomach, *Contracaecum osculatum*, *Phocascaris* sp., *Anisakis simplex*, sealworm, harp seal, Nfld., Labrador)
(8) : 1650 (stock identification, DNA, electrophoresis, *Philonema*, B.C.)
(12) : 2635 (parasites, muscles, Atlantic cod, *Anisakis simplex*)
TS 5563 (new species, parasites, lungs, ringed seal, *Parafilaroides krascheninnikovi*, Chuckchee Sea, Bering Sea)
5564 (new species, parasites, taxonomy, ringed seal, *Parafilaroides arcticus*, Chuckchee Sea)

Neocalanus flemingeri (*see* CRUSTACEA)
plumchrus (*see* CRUSTACEA)

Neogobius melanostomus (*see* GOBY, ROUND)

Neomysis americana (*see* MYSIDACEA)

Nephelopsis obscura (*see* LEECH)

NETHERLANDS
J 49(5) : 885 (environmental effects, light intensity, catchability, freshwater fishes, L. IJssel)
: 894 (feeding behavior, growth, mortality, zander, L. IJssel)
(10) : 2291 (life cycle, abnormalities, sediment pollution, *Chironomus*, L. Vossemeer)

NEVADA STATE, USA
J 49(6) : 1206 (phosphates, iron, phytoplankton, L. Tahoe)

NEW BRUNSWICK (PROVINCE), CANADA
J 49(12) : 2574 (stock identification, population genetics, biopolymorphism, northern quahog)
TF 1855 (survival, aquaculture techniques, environmental conditions, Atlantic salmon, Saint John R.)
MF 2132 (chemical oceanography, pollution effects, fishery industry plants, Black's Harbour)
2134 (flow simulation, measuring devices, historical account, DFO, St. Andrews)
2162 (physical oceanography, biological data, dispersion, larvae, Eastern oyster, Caraquet Bay)
2173 (documents, report literature, DFO, Gulf Region)
TH 142 (environmental monitoring, nuclear power plants, Point Lepreau)
DH 115 (aquaculture facilities, water temperature, salinity, Atlantic salmon, L'Etang Inlet)

NEW GENERA
TS 5565 (taxonomy, parasites, *Didymosculus*)

NEW JERSEY STATE, USA
J 49(9) : 1856 (growth, age, otoliths, larvae, juveniles, summer flounder)

NEW RECORDS
J 49(2) : 416 (introduced species, geographical distribution, tubenose goby, round goby, St. Clair R., North America)
: 422 (introduced species, geographical distribution, zooplankton, *Bythotrephes cederstroemi*, Muskoka, Ont.)
(7) : 1501 (geographical distribution, stock identification, "quagga mussel", Great Lakes, North America)
(8) : 1616 (introduced species, ruffe, St. Louis R., L. Superior)

NEW SPECIES
TS 5553 (taxonomy, parasites, *Bolbosoma tuberculata*, S Atl., Indian Ocean)
5563 (parasites, lungs, taxonomy, *Parafilaroides kraschenninikovi*, ringed seal, Chuckchee Sea, Bering Sea)
5564 (parasites, taxonomy, *Parafilaroides arcticus*, Chuckchee Sea)

NEW YORK STATE, USA
J 49(1) : 116 (paleolimnology, toxicity, aluminum, fishery resources, algae, Adirondack region)
: 128 (pollution effects, acidification, paleolimnology, lakes, Adirondack region)
(3) : 597 (chemical limnology, yield predictions, regression analysis, brook trout, lakes, Adirondack region)
(5) : 1060 (geographical distribution, biomass, zooplankton, Hudson R.)
(7) : 1455 (grazing, zooplankton, phytoplankton, models, freshwater lakes)
(8) : 1588 (trophic relationships, food webs, pelagic environment, Oneida L.)
(9) : 1902 (stock identification, DNA, cell organelles, lake herring, Susquehanna R.)
: 1916 (pollution effects, acidification, decomposition, sugar maple, Adirondack region)

NEW ZEALAND
J 49(5) : 922 (stock assessment, methodology, mathematical analysis, orange roughy, Chatham Rise)
TF 1827 (substrata, stability, hydrology, indicator species, aquatic invertebrates, Rangitukia Stream, Stony Stream)

NEWFOUNDLAND (PROVINCE), CANADA
J 49(2) : 202 (biomass, trap nets, time series analysis, Atlantic cod)
(4) : 754 (sexual maturity, sex hormones, seasonal variations, Atlantic halibut)
(5) : 956 (parasites, stomach, nematodes, harp seal)
(9) : 1953 (hybridization, natural populations, brown trout, Atlantic salmon)
(10) : 2086 (orientation behavior, geographical distribution, natural populations, sea scallop)
(11) : 2423 (migrations, tagging, stock identification, capelin)
(12) : 2588 (environmental effects, water

temperature, ice, survival, Atlantic cod)
: 2635 (parasites, muscles, *Anisakis simplex*, Atlantic cod)
TF 1825 (geographical distribution, environmental effects, check lists, rotifers, crustaceans, lakes)
1860 (biological sampling, biological data, population structure, short-finned squid)
1892 (commercial fishing, fishery policy, economic models)
MF 2154 (stock assessment, catch statistics, Iceland scallop, sea scallop)
2164 (landing statistics, historical account, American lobster)
DF 893 (catch statistics, summaries, Atlantic salmon)
IF 212 (conferences, aquaculture, research programs, technology transfer, Arctic char)
TH 141 (sea ice, oceanographic data, meteorological data)
DH 102 (dynamical oceanography, current meter data, tidal constants, Avalon Channel)
CH 41 (electromagnetism, sea ice thickness, measurement)
TS 5577 (gear selectivity, catchability, longlining, Atlantic cod, haddock)
EC 33 (aquaculture, economics, marketing, Atlantic salmon)

Newfoundland Shelf (*see* NORTHWEST ATLANTIC OCEAN)

Nitzschia pungens f. *multiseries* (*see* PLANKTON)

NORTH AMERICA
J 49(1) : 150 (population dynamics, mathematical models, introduced species, zebra mussel, lakes)
(2) : 416 (introduced species, new records, geographical distribution, tubenose goby, round goby, St. Clair R.)
(4) : 760 (stock identification, evolution, Pleistocene, lake whitefish, Nahanni National Park, N.W.T.)
: 769 (stock identification, evolution, sympatric populations, Pleistocene, lake whitefish, E North America)
(10) : 2196 (life history, species diversity, reproduction, fishes)

NORTH PACIFIC OCEAN
J 49(3) : 453 (swimming, marine environment, telemetry, coho salmon)
(11) : 2313 (fishery economics, fishery management, quota regulations, sablefish)
: 2386 (stock identification, DNA, polymers, slender armorhead, seamounts)

NORTHEAST PACIFIC OCEAN
TF 1802 (primary production, geographical distribution, spatial variations, phytoplankton, Alberni Inlet, Barkley Sound)
MF 2106 (fishery surveys, seiners, stock assessment, lingcod, Strait of Georgia)
2109 (sportfishing statistics, demersal fisheries, Pacific salmons, Strait of Georgia)
2133 (histology, ovaries, English sole, Hecate Strait)
2135 (by catch, prediction, bottom trawling, Pacific halibut, Hecate Strait)
DF 866 (fishery surveys, stock assessment, biological data, cruises, Hecate Strait)
DH 68 (oceanographic data, water properties, turbulence)
106 (oceanographic data, surface waves, turbulence)
107 (oceanographic data, CTD observations, hydrographic data)
108 (oceanographic data, CTD observations, hydrographic data)
109 (oceanographic data, CTD observations, hydrographic data)

NORTHWEST ATLANTIC OCEAN
J 49(1) : 91 (check lists, benthos, prey selection, juveniles, haddock, Browns Bank)
(3) : 467 (geographical distribution, dispersion, larvae, American plaice, yellowtail flounder, witch flounder, Grand Bank)
: 484 (recruitment, dispersion, larvae, haddock,Georges Bank)
(7) : 1474 (age determination, growth, tagging, sandbar shark)
(8) : 1597 (environmental effects, physical oceanography, dispersion, larvae, sea scallop, Georges Bank)
(10) : 2045 (fecundity, egg weight, reproductive organs, Atlantic herring)
(11) : 2242 (stock identification, growth, otoliths, Atlantic mackerel)
(12) : 2527 (stock identification, DNA, biopolymorphism, haddock)
TF 1844 (conferences, stock assessment, biomass, Atlantic cod)
1885 (environmental conditions, pollutants, historical account, East Coast)
TH 132 (coastal oceanography, water temperature, monitoring)
DH 32(4) (oil and gas industry, drilling fluids, hydrocarbons, inventories, Davis Strait)
85 (surface temperatures, satellite sensing, maps)
86 (surface temperatures, satellite

sensing, maps)
87 (surface temperature, satellite sensing, maps)
88 (surface temperature, satellite sensing, maps)
89 (surface temperature, satellite sensing, maps)
96 (hydrostatic pressure, current measurement, Hamilton Bank)
105 (atlases, oceanographic data, ice conditions, Newfoundland Shelf, Grand Bank)
110 (oceanic turbulence, vertical mixing, measurement, Georges Bank)

NORTHWEST TERRITORIES (TERRITORY), CANADA
J 49(4) : 760 (stock identification, evolution, Pleistocene, lake whitefish, Nahanni National Park)
(11) : 2354 (habitat improvement, food webs, Amphipoda, Trichoptera, oligotrophic lakes, Saqvaqjuac)
TF 1811 (migrations, broad whitefish, lake whitefish, least cisco, Kukjuktuk Creek)
MF 2130 (life history, migrations, Greenland halibut, Cumberland Sound)
DF 853 (feeding behavior, stomach content, fishes, Tuktoyaktuk Harbour)
867 (stock assessment, biological data, fish counters, Meliadine R.)
878 (stock assessment, biological data, fish counters, Arctic char, Freshwater Creek)
DH 104 (oceanography, salinity, nutrients, water temperature, Mackenzie R. delta)
EC 85 (fishery management, habitat, economic analysis)

NORWAY
J 49(2) : 229 (osmoregulation, photoperiods, light effects, Arctic char)
(6) : 1107 (recruitment, population density, allopatric populations, brown trout, L. Løyning)
(8) : 1539 (catchability, gillnets, population density, brown trout)
: 1546 (gear selectivity, gillnets, catchability, models, brown trout, L. Løyning)
TF 1831 : 1 (aquaculture development, potential yield, historical account, Atlantic salmon)
: 93 (aquaculture techniques, selective breeding, Salmonidae)
TS 5555 (fishery industry, processing fishery products, fishery economics)
5556 (aquaculture industry, aquaculture techniques, market research)
5567 (product development, cured products, by catch, marketing, spiny dogfish)
5572 (catch statistics, fishery economics, fishery management)
5579 (aquaculture, economics, marketing, Atlantic cod)

Notemigonus crysoleucas (*see* SHINER, GOLDEN)

NOVA SCOTIA (PROVINCE), CANADA
J 49(2) : 266 (stock identification, meristic counts, morphology, American shad, Cumberland Basin)
(3) : 513 (parasites, hosts, *Neomycis americana*, *Gammarus oceanicus*, sealworm, Wallace L., Sable I.)
(7) : 1486 (environmental impact, scallop fisheries, injuries, American lobster)
TF 1826 (pollution surveys, nutrients, heavy metals, suspended particulate matter, Halifax Harbour)
1855 (survival, aquaculture techniques, environmental conditions, Atlantic salmon, LaHave R.)
MF 2090 (stock assessment, fishery surveys, fishery management, softshell, Cole Harbour)
2110 (fishery surveys, spatial distribution, larvae, American lobster, Jeddore Harbour)
2123 (fishery surveys, population structure, tagging, juveniles, sea scallop)
2136 (life history, population characteristics, stock assessment, rivers, alewife, blueback herring)
2165 (historical account, exploitation, fishery management, American lobster, SW N.S.)
TH 82 (bibliographies, documents, BIO)
105 (surface gravity waves, radar imagery, drilling platforms, Sable I.)
DH 98 (water temperature, current measurements, St. Georges Bay)

O

OCEANOGRAPHY AND LIMNOLOGY
J 49(1) : 17 (chemical limnology, methyl mercury, production, control, Experimental Lakes Area, NW Ont.)
: 65 (paleolimnology, acidification, buffers, diatoms, Lysevatten L., Sweden)
: 116 (paleolimnology, toxicity, aluminum, fishery resources, algae, Adirondack region, NY)
: 128 (paleolimnology, pollution effects, acidification, lakes, Adirondack region, NY)
(2) : 252 (phosphorus isotopes, chemical kinetics, lakes)
: 337 (limnology, detritus, dynamics, streams, Malcolm Knapp Research Forest, B.C.)
(3) : 577 (chemical limnology, removal, orthophosphates, peat, Everglades, FL)
: 584 (limnology, environmental effects, fire, nutrients, streams, Experimental Lakes Area, NW Ont.)
: 597 (chemical limnology, yield

predictions, regression analysis, brook trout, lakes, Adirondack Region, NY)
(4) : 820 (physical oceanography, fishing vessel distribution, salmon fisheries, Vancouver I., B.C.)
(5) : 945 (limnology, organic matter, ice cover, Redó L., Spain)
: 975 (phosphorus, eutrophication, regression analysis, freshwater lakes)
: 1035 (species composition, spatial variations, temporal variations, zooplankton, L. Winnipeg, Man.)
(7) : 1431 (trophic structure, sediments, organic matter, inorganic matter, freshwater lakes, Ont., Que.)
(8) : 1597 (physical oceanography, environmental effects, dispersion, larvae, sea scallop, Georges Bank, NW Atl.)
: 1641 (nutrients, primary production, correlation analysis, lakes, PA)
(9) : 1778 (river discharge, environmental effects, population density, aquatic insects, Man.)
: 1873 (river meanders, islands, benthos, invertebrates, Ohio R., KY)
: 1938 (geochemistry, acidification, snowmelt, rivers, Atlantic salmon, Que.)
(10) : 2128 (chemical limnology, stream flow, sediment composition, river beds, Pembina R., Alta.)
(11) : 2363 (oxygen profiles, hypolimnion, prediction, models, oligotrophic lakes, Ont.)
(12) : 2434 (fishery limnology, lake morphology, research programs, Ont.)
: 2445 (phytoplankton, photosynthesis, lake morphology, Canadian Shield, Ont.)
: 2483 (water currents, sediments, models, aquatic plants, L. Memphremagog, Que.)
: 2490 (sediment distribution, wave motion, models, lakes)
: 2596 (nutrient recycling, bioenergetics, models, yellow perch, L. Memphremagog, Que.)
: 2605 (limnology, phytoplankton, biomass, chlorophylls)
: 2611 (colonization, limiting factors, models, lakes, zebra mussel)
(S1) : 8 (pollution indicators, water quality, acidification, lakes, Sudbury, Ont.)
: 17 (pollution indicators, vegetal fossils, acidification, lakes, Sudbury, Ont.)
: 25 (water quality, pollution control, acidification, lakes, Sudbury, Ont.)
: 33 (limnological data, satellite sensing, acidification, lakes, Sudbury, Ont.)

TF 1826 (chemical oceanography, pollution surveys, Halifax Harbour, N.S.)
1875 (chemical limnology, physical limnology, environmental monitoring, acid rain, lakes, rivers, Canada)
MF 2132 (chemical oceanography, pollution effects, fishery industry plants, Black's Harbour, N.B.)
2162 (physical oceanography, dispersion, larvae, Eastern oyster, Caraquet Bay, N.B.)
DF 850 (limnology, light attenuation, mixed-layer)
857 (chemical oceanography, chlorophylls, nutrients, Beaufort Sea Shelf)
862 (limnology, climate, zooplankton, Red L. district, L. Nipigon, NW Ont.)
TH 82 (bibliographies, documents, BIO, N.S.)
105 (surface gravity waves, radar imagery, drilling platforms, Sable I., N.S.)
132 (coastal oceanography, water temperature, monitoring, NW Atl.)
136 (acoustic equipment, position fixing, evaluation)
138 (manuals, computer programs, titration, dissolved oxygen)
139 (ice thickness, snow, radar, Beaufort Sea Shelf)
140 (conferences, oceanography, models, sea ice, wave motion, World Oceans)
141 (oceanographic data, sea ice, Nfld., Labrador)
DH 5(20:1) (chemical oceanography, chemical components, inventories, Beaufort Sea)
(20:2) (chemical oceanography, chemical components, inventories, Beaufort Sea)
(22) (chemical oceanography, chemical components, inventories, Northwest Passage)
60(8) (sediment sampling, sediment traps, chemical analysis, Beaufort Sea)
68 (oceanographic data, water properties, turbulence, NE Pac.)
85 (surface temperature, satellite sensing, maps, NW Atl.)
86 (surface temperature, satellite sensing, maps, NW Atl.)
87 (surface temperature, satellite sensing, maps, NW Atl.)
88 (surface temperature, satellite sensing, maps, NW Atl.)
89 (surface temperature, satellite sensing, maps, NW Atl.)
96 (hydrostatic pressure, current measurement, Hamilton Bank, NW Atl.)
98 (water temperature, current measurements, St. Georges Bay, N.S.)
99 (water temperature, salinity, water density, Hudson Strait, Arctic)

102 (dynamical oceanography, current meter data, tidal constants, Avalon Channel, Nfld.)
104 (oceanography, salinity, nutrients, water temperature, Beaufort Sea, Mackenzie R. delta, N.W.T.)
105 (atlases, oceanographic data, ice conditions, Newfoundland Shelf, Grand Bank, NW Atl.)
106 (oceanographic data, surface waves, turbulence, NE Pac.)
107 (oceanographic data, CTD observations, hydrographic data, NE Pac.)
108 (oceanographic data, CTD observations, hydrographic data, NE Pac.)
109 (oceanographic data, CTD observations, hydrographic data, NE Pac.)
110 (oceanic turbulence, vertical mixing, measurement, Georges Bank, NW Atl.)
111 (oceanographic data, fishery surveys, short-finned squid, S FL)
112 (oceanographic data, nutrients, salinity, cruises, Beaufort Sea)
113F (current meter data, meteorological data, winter, Hudson Bay, Canada)
CH 41 (sea ice thickness, electromagnetism, measurement, Nfld.)
TS 5578 (limnology, parasitism, lenitic environment, freshwater fishes, Kola Peninsula, Russia)

OHIO STATE, USA
J 49(6) : 1216 (food webs, predation, gizzard shad, zooplankton, Kokosing L.)

OLIGOCHAETA
J 49(10) : 2080 (PCBs, bioaccumulation, pollution indicators, sediments, *Lumbriculus variegatus*, *Limnodrilus* sp.)
DF 869 (check lists, abundance, seasonal distribution, L. Winnipeg, Man.)

Ommastrephes bartrami (*see* SQUID, FLYING)
(*Ommastrephes pacificus*)

Oncorhynchus clarki (*see* TROUT, CUTTHROAT)
clarki pleuriticus (*see* TROUT, CUTTHROAT)
gorbuscha (*see* SALMON, PINK)
keta (*see* SALMON, CHUM)
kisutch (*see* SALMON, COHO)
mykiss (*see* TROUT, RAINBOW) (*see also* TROUT, STEELHEAD)
nerka (*see* SALMON, SOCKEYE) (*see also* KOKANEE)
spp. (*see* SALMON (Pacific in general))
tshawytscha (*see* SALMON, CHINOOK)

ONTARIO, LAKE, NORTH AMERICA
J 49(9) : 1902 (stock identification, DNA cell organelles, lake herring)
(10) : 2009 (feeding behavior, plankton feeders, *Bythotrephes cederstroemi*, alewife)
(11) : 2249 (trophic relationships, food webs, feeding behavior, white perch, Bay of Quinte)
: 2377 (primary production, limiting factors, migrations, tributaries, Pacific salmons)

ONTARIO (PROVINCE), CANADA
J 49(1) : 52 (pollution effects, acidification, survival, *Hyalella azteca*, lakes)
: 185 (acidification, herbivores, abundance, metaphyton, lakes)
(2) : 406 (mapping, dispersion, zebra mussel, lakes)
: 422 (introduced species, new records, zooplankton, *Bythotrephes cederstroemi*, Muskoka)
(6) : 1228 (models, growth, freshwater fishes, lakes)
(7) : 1431 (trophic structure, sediments, organic matter, freshwater lakes)
(8) : 1588 (trophic relationships, food webs, pelagic environment, L. St. George)
(11) : 2363 (oxygen profiles, hypolimnion, prediction, models, oligotrophic lakes)
: 2412 (heterotrophic organisms, environmental factors, abundance, bacteria, rivers)
(12) : 2434 (fishery limnology, lake morphology, research programs)
: 2445 (phytoplankton, photosynthesis, lake morphology, Canadian Shield)
(S1) : 3 (acidification, pollution effects, mining, Sudbury)
: 8 (pollution indicators, acidification, water quality, lakes, Sudbury)
: 17 (pollution indicators, vegetal fossils, acidification, lakes, Sudbury)
: 25 (pollution control, acidification, mining, lakes, Sudbury)
: 33 (satellite sensing, acidification, limnological data, lakes, Sudbury)
: 40 (phytoplankton, acidification, correlation analysis, lakes, Sudbury)
: 52 (pollution effects, acidification, buffers, zooplankton, Bowland L.)
: 63 (environmental impact, pollution control, acidification, benthos, macroinvertebrates, lakes, Sudbury)
: 76 (pollution effects, acidification, community composition, Chironomidae, rivers, Sudbury)
: 87 (sport fishing, pollution

effects, sulphur dioxide, lake trout, brook trout, smallmouth bass, walleye, Sudbury)
: 95 (pollution effects, acidification, population number, lake trout, Sudbury)
: 102 (pollution effects, acidification, buffers, population dynamics, lake trout, Nelson L.)
: 114 (pollution effects, acidification, geographical distribution, Amphibia, ponds, Sudbury)
: 122 (acidification, habitat selection, breeding sites, aquatic birds, lakes, Sudbury)
TF 1863 : 87 (bioaccumulation, mercury, indicator species, yellow perch, common loon, lakes)
: 190 (pollution effects, pulp wastes, pollution control, white sucker, lake whitefish, Jackfish Bay)
: 317 (toxicity tests, sulfides, sediments, Jack L.)
DF 862 (zooplankton, limnology, climate, Red L. district, L. Nipigon, NW Ont.)

Ophiodon elongatus (*see* LINGCOD)

Orconectes luteus (*see* CRUSTACEA)
punctimanus (*see* CRUSTACEA)

OREGON STATE, USA
J 49(4) : 783 (habitat selection, seasonal variations, juveniles, coho salmon, coastal zone)
: 790 (habitat improvement, methodology, evaluation, juveniles, coho salmon, coastal zone)
(7) : 1379 (hydrography, wind-driven currents, geographical distribution, larvae, Dungeness crab)
(8) : 1670 (feeding behavior, summer, models, chinook salmon, coho salmon)
(12) : 2648 (demersal fisheries, community composition, species diversity, trawling)

Oreochromis spp. (*see* TILAPIA)

Oyster, American (*see* OYSTER, EASTERN)

OYSTER, EASTERN (*Crassostrea virginica*)
TF 1862 (catching methods, comparative studies, mortality, North R., P.E.I.)
MF 2162 (physical oceanography, biological data, dispersion, larvae, Caraquet Bay, N.B.)

P

PACIFIC OCEAN
J 49(4) : 795 (morphology, otoliths, regional variations, ruby snapper, S Pac.)

Pagophilus groenlandicus (*see* SEAL, HARP)

Pandalus borealis (*see* SHRIMP, NORTHERN)
jordani (*see* SHRIMP, OCEAN)
montagui (*see* SHRIMP, AESOP)

PARAFILAROIDES ARCTICUS (Nematoda)
TS 5564 (new species, parasites, taxonomy, ringed seal, Chuckchee Sea)

PARAFILAROIDES KRASCHENINNIKOVI (Nematoda)
TS 5563 (new species, parasites, lungs, ringed seal, Chuckchee Sea, Bering Sea)

Paragnetina media (*see* PERLODIDAE)

Paralichthys dentatus (*see* FLOUNDER, SUMMER)

Parophrys vetulus (*see* SOLE, ENGLISH)

PCBs (*see* POLYCHLORINATED BIPHENYLS; *see also* POLLUTION)

Penaeus orientalis (*see* PRAWN, FLESHY)
(*Penaeus* (*Fenneropenaeus*) *chinensis*)

PENNSYLVANIA STATE, USA
J 49(7) : 1455 (grazing, zooplankton, phytoplankton, models, freshwater lakes)
(8) : 1641 (primary production, nutrients, correlation analysis, lakes)

Pentaceros wheeleri (*see* ARMORHEAD, SLENDER)

Perca flavescens (*see* PERCH, YELLOW)

PERCH, PACIFIC OCEAN (*Sebastes alutus*)
J 49(4) : 632 (length, age, models)
(7) : 1315 (models, catch/effort, catch statistics)

PERCH, WHITE (*Morone americana*)
J 49(11) : 2249 (trophic relationships, food webs, feeding behavior, Bay of Quinte, L. Ontario)

PERCH, YELLOW (*Perca flavescens*)
J 49(2) : 293 (population dynamics, interspecific relationships, commercial fishing, walleye, freshwater drum, Red L., MN)
(4) : 805 (feeding behavior, body size, ontogeny, Great Lakes, North America)
(9) : 1932 (feeding behavior, body size, abundance, zooplankton, L. Erie)
(12) : 2474 (acidification, tolerance, metabolism, lakes, WI)
: 2596 (nutrient recycling, bioenergetics, models, L. Memphremagog, Que.)
TF 1863 : 87 (bioaccumulation, mercury, indicator species, lakes, Ont.)

DF 87 (biological data, catch composition, gillnets, Dauphin L., Man.)

PERIPHYTON
J 49(3) : 504 (production, nutrients, grazing, Clinch R., TN)
(6) : 1198 (biomass, nutrient enrichment, floods, Ozark Plateau, MO)
(8) : 1695 (sampling, variability, environmental factors)
(10) : 2155 (pollution effects, zinc, acclimation, *Aufwuchs*)
(12) : 2579 (pollution indicators, industrial wastes, physiological stress)

PERLODIDAE (stoneflies)
J 49(12) : 2630 (predation, avoidance reactions, rainbow trout, *Agnetina capitata*, *Paragnetina media*)

PERU
J 49(9) : 1762 (stock assessment, interspecific relationships, resource depletion, pilchard, Peruvian anchoveta)

Philonema spp. (*see* NEMATODA)

Phoca groenlandica (*see* SEAL, HARP)
hispida (*see* SEAL, RINGED)

Phocascaris sp. (*see* NEMATODA)

Phoxinus eos (*see* DACE, NORTHERN REDBELLY)
neogaeus (*see* DACE, FINESCALE)
phoxinus (*see* MINNOW, EURASIAN)

Physeter macrocephalus (*see* WHALE, SPERM)

PHYSIOLOGY AND BIOCHEMISTRY
J 49(1) : 99 (osmoregulation, population genetics, sympatric populations, kokanee, sockeye salmon, Shuswap L., B.C.)
: 110 (bioenergetics, swimming, feeding behavior, controlled conditions, Danube bleak, nase)
(2) : 229 (osmoregulation, photoperiods, light effects, Arctic char, Norway)
: 319 (DNA, cell organelles, walleye pollock, Bering Sea, Shelikof Strait, Gulf of Alaska, AK)
: 358 (DNA, genetics, geographical isolation, environmental impact, white sturgeon, Fraser R., B.C.)
(3) : 443 (salinity tolerance, osmoregulation, anadromous species, landlocked species, Arctic char)
: 448 (osmoregulation, rheotaxis, annual variations, landlocked species, Arctic char)
: 458 (stunting, osmoregulation, hormones, coho salmon)
: 462 (deep diving, radio telemetry, white whale, Arctic)
: 516 (freezing, glycoproteins, overwintering, juveniles, Atlantic cod)
: 523 (swimming, evaluation, stereocinematography, fishes)
(5) : 870 (seasonal variations, diurnal variations, blood parameters, brook trout)
: 939 (histopathology, pollution effects, pulp wastes, controlled conditions, rainbow trout)
: 967 (methodology, measurement, DNA, RNA, larvae, Pacific herring)
: 1070 (pharmacokinetics, metabolism, sulfadimethoxine, rainbow trout)
(6) : 1086 (bioenergetics, mercury, PCBs, models, lake trout)
: 1097 (osmoregulation, sexual maturity, salinity tolerance, Atlantic salmon)
: 1142 (metabolism, measurement, respirometers, invertebrates)
: 1149 (osmoregulation, seasonal variations, salinity tolerance, Atlantic cod)
: 1157 (biological stress, air exposure, angling, commercial fishing, rainbow trout)
: 1189 (osmoregulation, acidification, aluminum, mortality, largemouth bass)
(7) : 1389 (sublethal responses, suspended sediments, coho salmon, Fraser R., B.C.)
: 1406 (bioenergetics, growth, models, zebra mussel, Great Lakes, North America)
(8) : 1560 (pollution effects, pulp wastes, lake whitefish, L. Superior)
: 1583 (bioenergetics, environmental effects, overwintering, leech)
: 1650 (DNA, electrophoresis, stock identification, *Philonema*, B.C.)
: 1704 (olfaction, chemical stimuli, smolts, Atlantic salmon)
(9) : 1953 (hybridization, natural populations, brown trout, Atlantic salmon, Nfld.)
(11) : 2260 (metabolism, starvation, fish handling, fish culture, rainbow trout)
: 2267 (bioenergetics, diets, proteins, lipids, lake trout)
: 2273 (sexual maturity, photoperiods, juveniles, Atlantic salmon)
: 2300 (photoperiods, life history, population genetics, juveniles, Atlantic salmon)
: 2399 (osmoregulation, salinity tolerance, swimming, juveniles, coho salmon)
: 2406 (fats, bioaccumulation, self purification, aquaculture, channel catfish)
(12) : 2474 (metabolism, tolerance, acidification, yellow perch, WI)

: 2566 (bioenergetics, feeding behavior, activity patterns, brook trout)
: 2579 (pollution indicators, industrial wastes, physiological stress, periphyton)
: 2596 (bioenergetics, nutrient recycling, models, yellow perch, L. Memphremagog, Que.)
TF 1785 (polyploids, sterility, aquaculture techniques, coho salmon)
1788 (bibliographies, parthenogenesis, androgenesis, fishes)
1829 (mixed function oxygenases, environmental monitoring, pulp wastes, procedures, fishes)
1863 : 106 (diseases, environmental monitoring, water quality, fishes)
: 325 (biochemistry, pollution effects, cadmium, giant floater)
MF 2133 (histology, ovaries, English sole, Hecate Strait, NE Pac.)
TS 5568 (prawn culture, nutritional requirements, lipids, fleshy prawn, Rep. China)
5569 (aquaculture, metabolism, fatty acids, Cyprinidae, Rep. China)
5570 (prawn culture, fish culture, nutritional requirements, lipids, Rep. China)

PIKE, NORTHERN (*Esox lucius*)
J 49(1) : 166 (pollution effects, pulp wastes, disease, skull, Gulf of Bothnia, Baltic sea)
(6) : 1176 (interspecific relationships, avoidance reactions, predation, freshwater fishes, Bolger Bog, MI)
TF 1823 (environmental impact, reservoirs, feeding behavior, reproduction, Wupaw Bay, Southern Indian L., Man.)
DF 875 (biological data, catch composition, gillnets, Dauphin L., Man.)

PILCHARD (*Sardinops sagax*)
J 49(9) : 1762 (stock assessment, equatorial upwelling, resource depletion, Peruvian anchoveta, Peru)

Pimephales promelas (*see* MINNOW, FATHEAD)

Placopecten magellanicus (*see* SCALLOP, SEA) (giant scallop)

PLAICE, AMERICAN (*Hippoglossoides platessoides*)
J 49(3) : 467 (geographical distribution, dispersion, larvae, Grand Bank, NW Atl.)
(12) : 2538 (stock identification, DNA, biopolymorphism, Gulf of St. Lawrence)

PLANKTON
J 49(1) : 65 (acidification, buffers, paleontology, diatoms, Lysevatten L., Sweden)
: 73 (zooplankton, prey selection, feeding behavior, Atlantic herring, Baltic Sea, Gulf of Bothnia)
: 85 (neurotoxins, domoic acid, experimental culture)
(2) : 252 (phosphorus isotopes, chemical kinetics, lakes)
: 303 (morphology, domoic acid, *Nitzschia pungens* f. *multiseries*, P.E.I.)
: 379 (picoplankton, phototropism, production, biomass, L. Huron, L. Michigan)
: 389 (zooplankton, length, periodic variations, *Neocalanus plumchrus*, *Neocalanus flemingeri*, Gulf of Alaska, AK)
(4) : 663 (zooplankton, check lists, sediment traps, winter, Beaufort Sea)
(5) : 857 (zooplankton, environmental effects, outflow waters, community composition, Gulf of St. Lawrence)
: 903 (zooplankton, biomass, species composition, seasonal variations, continental shelf, B.C.)
: 992 (phytofauna, macrophytes, trophic structure, freshwater lakes, Que.)
: 1035 (zooplankton, species composition, spatial variations, temporal variations, L. Winnipeg, Man.)
: 1060 (zooplankton, geographical distribution, biomass, Hudson R., NY)
(6) : 1206 (phytoplankton, phosphates, iron, L. Tahoe, NV, CA)
: 1216 (zooplankton, food webs, predation, gizzard shad, Kokosing L., OH)
(7) : 1455 (zooplankton, grazing, phytoplankton, models, freshwater lakes, CT, NY, PA)
: 1466 (primary production, plankton feeders, biomass, gizzard shad, bluegill)
(9) : 1734 (zooplankton, community composition, abundance, historical account, L. Michigan)
: 1908 (phytoplankton, abundance, plankton feeders, trophic relationships)
: 1924 (phytoplankton, distribution, mortality causes, *Chaetoceros convolutus*, *Chaetoceros concavicornis*, B.C.)
: 1932 (abundance, feeding behavior, body size, yellow perch, L. Erie)
(11) : 2281 (phytoplankton, environmental effects, nutrients, production, saline lakes, Humboldt L., Redberry L., Sask.)
: 2331 (phytoplankton, chlorophylls, chemical extraction, chromatographic techniques)

(12) : 2445 (phytoplankton, photosyntheses, lake morphology, Canadian Shield, Ont.)
: 2498 (nutrient cycles, excretory products, phytoplankton, zooplankton, sockeye salmon)
: 2507 (zooplankton, biomass, acidification, algae)
: 2605 (phytoplankton, biomass, phosphorus, chlorophylls)
(S1) : 40 (phytoplankton, acidification, correlation analysis, lakes, Sudbury, Ont.)
: 52 (zooplankton, pollution effects, acidification, buffers, Bowland L., Ont.)
TF 1802 (phytoplankton, primary production, geographical distribution, spatial variations, Alberni Inlet, Barkley Sound, NE Pac.)
1822 (zooplankton, introduced species, monitoring, surface craft, Great Lakes, North America, St. Lawrence R.)
1825 (zooplankton, geographical distribution, environmental effects, check lists, lakes, Nfld.)
1841 (zooplankton, dynamics, abundance, walleye, Methley Beach, Dauphin L., Man.)
DF 862 (zooplankton, limnology, climate, Red L. district, L. Nipigon, NW Ont.)
868 (check lists, seasonal distribution, abundance, Crustacea, L. Winnipeg, Man.)
TH 103 (microplankton, fossils, taxonomy, dinoflagellates, Rep. China)
137 (phytoplankton, taxonomy, check lists, Esquimalt Lagoon, B.C.)

Pleuronectes americanus (*see* FLOUNDER, WINTER) (*Pseudopleuronectes americanus*)
ferrugineus (*see* FLOUNDER YELLOWTAIL) (*Limanda ferruginea*)
vetulus (*see* SOLE, ENGLISH) (*Parophrys vetulus*)

POLLOCK, WALLEYE (*Theragra chalcogramma*)
J 49(2) : 319 (stock identification, DNA, cell organelles, Bering Sea, Shelikof Strait, Gulf of Alaska, AK)
(9) : 1801 (ageing, errors, statistical models)

POLLUTION (*see also* TOXICITY)
J 49(1) : 17 (methyl mercury, production, control, Experimental Lakes Area, NW Ont.)
: 52 (pollution effects, acidification, survival, *Hyalella azteca*, lakes, Ont.)
: 65 (acidification, buffers, paleolimnology, diatoms, Lysevatten L., Sweden)
: 128 (pollution effects, acidification, paleolimnology, lakes, Adirondack region, NY)
: 142 (mercury, biological resistance, genotypes, caddisflies)
: 147 (mercury, biological resistance, genotypes, caddisflies)
: 166 (pollution effects, pulp wastes, disease, skull, northern pike, Gulf of Bothnia, Baltic Sea)
: 185 (acidification, abundance, metaphyton, algae, lakes, Ont.)
(4) : 655 (bioaccumulation, zinc, cadmium, diets, *Limnesia maculata*, *Mystacides* spp.)
: 722 (dioxins, fate, enclosures, Experimental Lakes Area, NW Ont.)
: 735 (dioxins, bioavailability, enclosures, invertebrates, white sucker, Experimental Lakes Area, NW Ont.)
: 833 (pollution effects, acidification, larvae, blackflies)
(5) : 939 (pollution effects, pulp wastes, histopathology, controlled conditions, rainbow trout)
: 978 (pollution detection, bioaccumulation, copper, zinc, white sucker)
: 1010 (mercury, bioaccumulation, tissues, marine fishes, marine invertebrates)
(6) : 1086 (mercury, PCBs, bioenergetics, models, lake trout)
: 1184 (pollution detection, taxonomy, macrobenthos, Puget Sound, WA)
: 1189 (acidification, aluminum, osmoregulation, mortality, largemouth bass)
: 1236 (sewage, eutrophic waters, nutrients, Pearce L., Que.)
(8) : 1560 (pollution effects, pulp wastes, physiology, lake whitefish, L. Superior)
: 1633 (toxicity tests, bicarbonates, pore water, cladocerans, Grand Calumet R., MI)
: 1686 (pollution effects, heavy metals, benthos, invertebrates, Clinch R., VA)
(9) : 1916 (pollution effects, acidification, decomposition, sugar maple, Adirondack region, NY)
: 1938 (acidification, geochemistry, snowmelt, rivers, Atlantic salmon, Que.)
(10) : 2070 (pollution effects, cadmium, zinc, juveniles, Eurasian minnow)
: 2080 (PCBs, bioaccumulation, pollution indicators, fathead minnow, black bullhead, oligochaetes, sediments)
: 2141 (pollution indicators, trace elements, aquatic insects, rivers)
: 2155 (pollution effects, zinc, acclimation, periphyton, *Aufwuchs*)
: 2190 (pollution effects, crude oil, sediments, sex hormones, winter flounder)

: 2291 (sediment pollution, life cycle, abnormalities, *Chironomus*, L. Vossemeer, Netherlands)
(11) : 2392 (pollution effects, acidification, aluminum, *Daphnia galeata mendotae*, *Bosmina longirostris*)
(12) : 2474 (acidification, tolerance, metabolism, yellow perch, WI)
: 2507 (acidification, biomass, algae, zooplankton)
: 2579 (pollution indicators, industrial wastes, physiological stress, periphyton)
(S1) : 3 (pollution effects, acidification, mining, Sudbury, Ont.)
: 8 (pollution indicators, acidification, water quality, lakes, Sudbury, Ont.)
: 17 (pollution indicators, vegetal fossils, acidification, lakes, Sudbury, Ont.)
: 25 (pollution control, acidification, mining, lakes, Sudbury, Ont.)
: 33 (acidification, satellite sensing, limnological data, lakes, Sudbury, Ont.)
: 40 (acidification, phytoplankton, correlation analysis, lakes, Sudbury, Ont.)
: 52 (pollution effects, acidification, buffers, zooplankton, Bowland L., Ont.)
: 63 (pollution control, environmental impact, acidification, benthos, macroinvertebrates, lakes, Sudbury, Ont.)
: 76 (pollution effects, acidification, community composition, Chironomidae, rivers, Sudbury, Ont.)
: 87 (pollution effects, sulphur dioxide, sport fishing, Sudbury, Ont.)
: 95 (pollution effects, acidification, population number, lake trout, Sudbury, Ont.)
: 102 (pollution effects, acidification, buffers, population dynamics, lake trout, Nelson L., Ont.)
: 114 (pollution effects, acidification, geographical distribution, Amphibia, ponds, Sudbury, Ont.)
: 122 (acidification, habitat selection, breeding sites, aquatic birds, lakes, Sudbury, Ont.)
TF 1784 (toxicity, aromatic hydrocarbons, embryonic development, rainbow trout)
1824 (bioaccumulation, mercury, impoundments, freshwater fishes, Southern Indian L., Issett L., Man.)
1826 (pollution surveys, nutrients, heavy metals, suspended particulate matter, Halifax Harbour, N.S.)
1829 (environmental monitoring, pulp wastes, mixed function oxygenases, procedures, fishes)
1836 (pollution effects, sex hormones, radioimmunoassay, freshwater fishes, Canada)
1845F (environmental impact, habitat, white whale, St. Lawrence R. estuary)
1851F (chlorine compounds, inventories, sediments, Laurentian Trough, St. Lawrence R. estuary)
1863 (toxicology, aquatic environment, environmental monitoring, conferences, World Waters)
: 27 (sediment pollution, mercury, sulphur, Saguenay Fjord, Que.)
: 39 (bioaccumulation, mercury, sea star, Sweden)
: 49 (bioaccumulation, mercury, transport processes, polar starfish)
: 67 (sediment pollution, heavy metals, Amphipoda, St. Lawrence R.)
: 87 (mercury, bioaccumulation, indicator species, yellow perch, common loon, lakes, Ont.)
: 175 (dispersants, oil removal, toxicity tests, models, marine organisms)
: 190 (pollution effects, pulp wastes, pollution control, white sucker, lake whitefish, Jackfish Bay, Ont.)
: 200 (environmental monitoring, water quality, environmental protection, Que.)
: 272 (bioaccumulation, chromium, marine organisms, Qaqortoq, Greenland)
: 299 (heavy metals, chlorine compounds, bioaccumulation, aquatic organisms, Que.)
: 325 (pollution effects, cadmium, biochemistry, giant floater)
: 330 (pollution effects, bioaccumulation, manganese, chelates, brown trout)
1875 (environmental monitoring, DFO, acid rain, lakes, rivers, Canada)
1885 (pollutants, environmental conditions, historical account, East coast, NW Atl.)
1887 (pollution effects, oil spills, habitat, American lobster)
MF 2121 (environmental impact, suspended sediment, growth, blue mussel)
2126F (pollution effects, population dynamics, research programs, conferences, white whale, Gulf of St. Lawrence)
2132 (pollution effects, fishery industry plants, chemical oceanography, Black's Harbour, N.B.)
2140 (conferences, chemical pollutants, PCBs, experimental research,

Experimental Lakes Area, NW Ont.)
2176 (environmental protection, herbicides, forest industry, habitat, freshwater fishes, B.C.)
DF 846 (pollution effects, acidification, length, pearl dace, fathead minnow, finescale dace, northern redbelly dace, Experimental Lakes Area, NW Ont.)
879 (chemical pollutants, chlorine compounds, intercalibration, marine environment, Canada)
TH 124 (pollution effects, pulp wastes, water quality, Neroutsos Inlet, B.C.)
135 (toxicity, algal blooms, environmental monitoring, conferences, B.C.)
142 (environmental monitoring, nuclear power plants, Point Lepreau, N.B.)
DH 32(4) (hydrocarbons, drilling fluids, oil and gas industry, inventories, Beaufort Sea, Arctic Is., Davis Strait)
103F (hydrocarbons, sediments, methodology, St. Lawrence R.)
TS 5550 (mass spectroscopy, resonance frequency, organic compounds)
5551 (pollution monitoring, acidification, research programs, DFO, Canada)

POLYCHLORINATED BIPHENYLS (PCBs) (*see also* POLLUTION)
J 49(10) : 2080 (bioaccumulation, pollution indicators, black bullhead, fathead minnow, oligochaetes, sediments)
MF 2140 (pollution, experimental research, Experimental Lakes Area, NW Ont.)

POPULATION DYNAMICS
J 49(1) : 2 (mathematical models, variance analysis, weight, controlled conditions, rainbow trout, Arctic char)
: 52 (survival, pollution effects, acidification, *Hyalella azteca*, lakes, Ont.)
: 150 (introduced species, mathematical models, zebra mussel, lakes, North America)
: 173 (survival, winter, environmental effects, freshwater drum, Mississippi R., USA)
(2) : 210 (fecundity, recruitment, models)
: 281 (genetics, models, fishery management, sockeye salmon)
: 293 (interspecific relationships, commercial fishing, time series analysis, walleye, yellow perch, freshwater drum, Red L., MN)
: 368 (survival, growth, lipids, larvae, northern shrimp)
(3) : 484 (recruitment, dispersion, larvae, haddock, Georges Bank, NW Atl.)
: 609 (fecundity, population density, predation, *Microarthridion littorale*, North Inlet, SC)
(4) : 644 (sexual maturity, spawning populations, nutrition, Baltic herring, Archipelago Sea, Baltic Sea)
: 754 (sexual maturity, sex hormones, seasonal variations, Atlantic halibut, Nfld.)
(5) : 894 (growth, mortality, feeding behavior, zander, L. IJssel, Netherlands)
: 985 (aggregations, population number, fresh water, mussels)
: 1027 (recruitment, population number, stream flow, Arctic grayling, Chena R., AK)
(6) : 1097 (sexual maturity, osmoregulation, salinity tolerance, Atlantic salmon)
: 1107 (recruitment, population density, allopatric populations, brown trout, Løyning L., Norway)
: 1114 (spawning, seasonal variations, environmental effects, American lobster)
: 1118 (embryonic development, temperature effects, models, *Bythotrephes cederstroemii*)
: 1189 (mortality, acidification, aluminum, osmoregulation, largemouth bass)
(7) : 1282 (moulting, reproduction, snow crab, Gulf of St. Lawrence)
: 1336 (growth, periodicity, sexual maturity, females, lake sturgeon, St. Lawrence R.)
(8) : 1583 (bioenergetics, environmental effects, overwintering, leech)
: 1619 (sexual maturity, ecdysones, males, snow crab)
(9) : 1754 (recruitment, survival, distribution, numerical analysis, marine fishes)
: 1762 (interspecific relationships, equatorial upwelling, resource depletion, pilchard, Peruvian anchoveta, Peru)
: 1826 (survival, turbines, American shad)
: 1883 (mortality causes, parasites, *Ceratomyxa shasta*, juveniles, chinook salmon, Fraser R., B.C.)
(10) : 1990 (mortality, population density, body size, demersal fishes, Namibia)
: 2020 (mortality, variance analysis, recruitment, fishery management)
: 2028 (recruitment, variability, oceanic convection, environmental effects, Dungeness crab, WA)
: 2045 (fecundity, egg weight, reproductive organs, Atlantic herring, NW Atl.)
: 2118 (fecundity, sperm, hatching, eggs, Atlantic cod)
: 2164 (mortality, sport fishing, juveniles, coho salmon, chinook

salmon, Saanich Inlet, B.C.)
: 2196 (life history, species diversity, reproduction, fishes, North America)
(11) : 2222 (dispersion, stock assessment, marine fishes, haddock, Scotian Shelf, NW Atl.)
: 2273 (sexual maturity, photoperiods, juveniles, Atlantic salmon)
: 2291 (life cycle, abnormalities, sediment pollution, *Chironomus*, L. Vossemeer, Netherlands)
: 2300 (life history, population genetics, photoperiods, juveniles, chinook salmon)
: 2337 (survival, sediment transport, embryos, Salmonidae)
(12) : 2460 (sexual maturity, reproductive organs, morphology, males, snow crab)
: 2546 (aerial surveys, population number, pups, hooded seal, Gulf of St. Lawrence)
: 2588 (environmental effects, water temperature, ice, survival, Atlantic cod, Nfld.)
: 2621 (life history, habitat, juveniles, chinook salmon, Situk R., AK)
(S1) : 76 (community composition, pollution effects, acidification, Chironomidae, rivers, Sudbury, Ont.)
: 102 (pollution effects, acidification, buffers, lake trout, Nelson L., Ont.)
TF 1832 (biology, conferences, striped bass, Scotia-Fundy Region, NW Atl.)
1849 (life history, stock identification, sockeye salmon, B.C.)
1853 (survival, production, stomach content, sockeye salmon, Pitt L., B.C.)
1855 (survival, aquaculture techniques, environmental conditions, Atlantic salmon, Saint John R., N.B., LaHave R., N.S.)
1887 (life history, habitat, environmental effects, American lobster)
MF 2126F (research programs, conferences, white whale, Gulf of St. Lawrence)
2130 (life history, migrations, Greenland halibut, Cumberland Sound, N.W.T.)
2136 (life history, population characteristics, stock assessment, alewife, blueback herring, rivers, N.S.)
TS 5559 (moulting, males, snow crab, Sea of Japan)
5562 (embryonic development, environmental effects, water temperature, marine fishes)
5566 (biological data, hatcheries, aquaculture, Atlantic salmon, Lower Luven'ga R., Russia)

POPULATION STRUCTURE
J 49(1) : 78 (methodology, photographs, females, juveniles, sperm whale, Galapagos Is., Ecuador)
(5) : 1027 (population number, recruitment, stream flow, Arctic grayling, Chena R., AK)
(8) : 1539 (population density, catchability, gillnets, brown trout, Norway)
: 1546 (gear selectivity, gillnets, catchability, models, brown trout, L. Løyning, Norway)
: 1555 (age groups, length, trawling, roach, L. Vesijärvi, Finland)
: 1657 (population factors, models, Pacific hake)
(10) : 1990 (population density, body size, mortality, demersal fishes, Namibia)
(12) : 2538 (stock identification, DNA, biopolymorphism, American plaice, Gulf of St. Lawrence)
TF 1814 (environmental impact, hydroelectric power, macroinvertebrates, Playgreen L., Kiskittogisu L., Man.)
1849 (stock identification, life history, sockeye salmon, B.C.)
1860 (biological data, biological sampling, short-finned squid, Nfld.)
MF 2123 (fishery surveys, tagging, juveniles, sea scallop, N.S.)
2136 (species composition, year classes, alewife, blueback herring, rivers, N.S.)
2146 (year class, stock assessment, prediction, Pacific herring, B.C.)
2147 (escapement, tagging, chinook salmon, Kitsumkalum R., B.C.)
2156F (snow crab, Saguenay Fjord, Que.)
TS 5580(2) (population characteristics, seasonal variations, migrations, Atlantic herring, sprat, Kiel Bay, Baltic Sea)

Portunus trituberculatus (*see* CRAB, [SWIMMING])

PRAWN, FLESHY (*Penaeus orientalis*) (*Penaeus* (*Fenneropenaeus*) *chinensis*)
TS 5568 (prawn culture, nutritional requirements, lipids, Rep. China)
5576 (prawn culture, feeding experiments, digestibility)

PREDATION AND COMPETITION
J 49(1) : 159 (predation, avoidance reactions, feeding behavior, *Daphnia pulex*, *Chaoborus americanus*)
: 185 (herbivores, abundance, metaphyton, algae, lakes, Ont.)
(2) : 293 (interspecific relationships, population dynamics, commercial fishing, walleye, yellow perch, freshwater drum, Red L., MN)
(3) : 504 (grazing, production, periphyton, Clinch R., TN)

: 609 (predation, *Microarthridion littorale*, North Inlet, SC)
(4) : 813 (prey selection, feeding behavior, larvae, golden shiner)
(6) : 1137 (predation, vertical migrations, diurnal variations, Pacific sand lance, *Pseudocalanus newmani*, Dabob Bay, WA)
: 1176 (predation, interspecific relationships, avoidance reactions, northern pike, freshwater fishes, Bolger Bog, MI)
: 1216 (predation, food webs, zooplankton, gizzard shad, Kokosing L., OH)
: 1257 (competition, food availability, controlled conditions, club elimia, caddisflies)
(8) : 1714 (trophic relationships, predation, rock bass, smallmouth bass, crayfish, MO)
(10) : 2093 (trophic relationships, food webs, brook trout, rivers, Que.)
(11) : 2322 (trophic relationships, food webs, community composition, streams, KY)
(12) : 2551 (predation, squawfish, juveniles, Pacific salmons, Columbia R., WA)
: 2630 (predation, avoidance reactions, *Paragnetina media*, *Agnetina capitata*, rainbow trout)
TF 1853 (survival, production, stomach content, sockeye salmon, Pitt L., B.C.)
MF 2141 (predators, chinook salmon, rainbow trout, northern squawfish, mountain whitefish, bull trout, Nechako R., B.C.)

PRINCE EDWARD ISLAND (PROVINCE), CANADA
J 49(2) : 303 (morphology, plankton, domoic acid, *Nitzschia pungens* f. *multiseries*)
: 312 (depuration, toxicity, domoic acid, blue mussel)
: 400 (bioaccumulation, domoic acid, models, blue mussel, Cardigan Bay)
(12) : 2574 (stock identification, population genetics, biopolymorphism, northern quahog)
TF 1862 (catching methods, comparative studies, mortality, Eastern oyster, North R.)
1882 (economic analysis, shellfish closures, bacterial diseases, Mollusca)

PRODUCTION
J 49(2) : 379 (picoplankton, phototropism, biomass, L. Huron, L. Michigan)
: 389 (secondary production, length, periodic variations, *Neocalanus plumchrus*, *Neocalanus flemingeri*, Gulf of Alaska, AK)
(3) : 504 (periphyton, nutrients, grazing, Clinch R., TN)
: 532 (secondary production, biomass, regression analysis, running water, invertebrates)
(4) : 694 (primary production, vertical migrations, phosphorus, *Ceratium hirundinella*, Eau Galle Reservoir, WI)
(5) : 903 (biomass, species composition, seasonal variations, zooplankton, continental shelf, B.C.)
: 992 (phytofauna, macrophytes, trophic structure, freshwater lakes, Que.)
(6) : 1206 (primary production, phosphates, iron, phytoplankton, L. Tahoe, NV, CA)
(7) : 1466 (primary production, plankton feeders, biomass, gizzard shad, bluegill)
(8) : 1528 (biomass, ecosystems, aquatic organisms, yield predictions, World Waters)
: 1641 (primary production, nutrients, correlation analysis, lakes, PA)
: 1695 (primary production, sampling, variability, environmental factors, periphyton)
(11) : 2281 (phytoplankton, environmental effects, nutrients, saline lakes, Humboldt L., Redberry L., Sask.)
: 2377 (primary production, limiting factors, migrations, tributaries, Pacific salmons, L. Ontario)
: 2412 (heterotrophic organisms, environmental factors, abundance, bacteria, rivers, Ont.)
(12) : 2445 (primary production, phytoplankton, photosynthesis, lake morphology, Canadian Shield, Ont.)
TF 1802 (primary production, geographical distribution, spatial variations, phytoplankton, Alberni Inlet, Barkley Sound, NE Pac.)
TS 5560 (secondary production, biomass, regression analysis, lotic environment, benthic invertebrates)

Prosopium williamsoni (*see* WHITEFISH, MOUNTAIN)

Proterorhinus marmoratus (*see* GOBY, TUBENOSE)

Pseudocalanus newmani (*see* CRUSTACEA)

Pseudopentaceros wheeleri (*see* ARMORHEAD, SLENDER)

Pseudopleuronectes americanus (*see* FLOUNDER, WINTER)

Pseudoterranova decipiens (*see* SEALWORM)

Ptychocheilus oregonensis (*see* SQUAWFISH, NORTHERN)

Pusa hispida (*see* SEAL, RINGED)
(*Pusa hispida kraschenninnikovi*)

Q

QUAHOG, NORTHERN (*Mercenaria mercenaria*)
J 49(12) : 2574 (stock identification, population genetics, biopolymorphism, ME, N.B., P.E.I.)

QUEBEC (PROVINCE), CANADA
J 49(1) : 46 (age determination, body size, scales, marine environment, Atlantic salmon, St-Jean R.)
(5) : 992 (phytofauna, macrophytes, trophic structure, freshwater lakes)
: 1001 (feeding behavior, prey selection, models, brook trout)
(6) : 1236 (sewage, eutrophic waters, nutrients, Pearce L.)
(7) : 1431 (trophic structure, sediments, organic matter, freshwater lakes)
(9) : 1938 (acidification, geochemistry, snowmelt, rivers, Atlantic salmon)
: 1959 (stock identification, morphology, meristic counts, lake sturgeon, Lac Deux Montagnes)
(10) : 2093 (trophic relationships, food webs, predation, brook trout, rivers)
: 2179 (stock assessment, echo surveys, vertical migrations, fishes, L. Memphremagog)
(12) : 2483 (aquatic plants, water currents, sediments, clays, L. Memphremagog)
: 2596 (nutrient recycling, bioenergetics, models, yellow perch, L. Memphremagog)
TF 1863 : 27 (mercury, sediment pollution, sulphur, Saguenay Fjord)
: 200 (environmental monitoring, water quality, environmental protection, criteria)
: 299 (pollution, heavy metals, chlorine compounds, bioaccumulation, aquatic organisms)
MF 2156F (geographical distribution, population structure, stock assessment, snow crab, Saguenay Fjord)
2164 (landing statistics, historical account, American lobster)
EC 84F (fishery industry, economic analysis, fishery resources)
88F (economic analysis, market research, landing statistics, snow crab)
118F (fish consumption, market research, seafood, food fish)
121F (economic analysis, landing statistics, marketing, sea scallop)

Queen Charlotte Islands (*see* BRITISH COLUMBIA)

R

REDHORSE, SHORTHEAD (*Moxostoma macrolepidotum*)
DF 875 (biological data, catch composition, gillnets, Dauphin L., Man.)

Reinhardtius hippoglossoides (*see* HALIBUT, GREENLAND)

REPRODUCTION
J 49(7) : 1282 (snow crab, Gulf of St. Lawrence)
(8) : 1560 (pollution effects, pulp wastes, lake whitefish, L. Superior)
(9) : 1835 (rematuration, captivity, kelt, Atlantic salmon)
(10) : 2055 (environmental effects, photoperiod, water temperature, Atlantic salmon)
: 2190 (sex hormones, pollution effects, crude oil, sediments, winter flounder)
(11) : 2273 (sexual maturity, photoperiods, juveniles, Atlantic salmon)
(12) : 2546 (aerial surveys, population number, pups, hooded seal, Gulf of St. Lawrence)
TF 1823 (environmental impact, reservoirs, northern pike, Wupaw Bay, Southern Indian L., Man.)
1831 : 133 (aquaculture techniques, rearing, smolts, Salmonidae)
1842 (production, colonization, hatcheries, coho salmon, Grand L., B.C.)
IF 211 (aquaculture, research programs, Arctic char, Atl. Canada)

RESEARCH INSTITUTIONS
TF 1865 (research programs, DFO, historical account, Great Lakes, North America)
TS 5551 (research programs, DFO, pollution monitoring, acidification, Canada)

Rhithropanopeus harrisii (*see* CRAB, HARRIS MUD)

RNA (Ribonucleic acid) (*see* PHYSIOLOGY AND BIOCHEMISTRY)

ROACH (*Rutilus rutilus*)
J 49(8) : 1555 (sampling, trawling, age groups, length, L. Vesijärvi, Finland)

ROCKFISH, WIDOW (*Sebastes entomelas*)
J 49(12) : 2648 (demersal fisheries, trawling, WA, OR)

ROCKFISHES (*Sebastes* spp.) (*see also* names of species)
J 49(7) : 1343 (behavioral responses, sound, geophysical surveys)
: 1357 (behavioral responses, sound, geophysical surveys, catch/effort, CA)

ROTATORIA (rotifers)
TF 1825 (geographical distribution, environmental effects, check lists, lakes, Nfld.)

ROUGHY, ORANGE (*Hoplostethus atlanticus*)
J 49(5) : 922 (stock assessment, methodology, mathematical analysis, Chatham Rise, New Zealand)

RUFFE (*Gymnocephalus cernuus*)
J 49(8) : 1616 (new records, introduced species, St. Louis R., L. Superior)

RUSSIA
TS 5566 (biological data, hatcheries, aquaculture, Atlantic salmon, Lower Luven'ga R.)
5578 (parasitism, lenitic environment, limnology, freshwater fishes, Kola Peninsula)

Rutilus rutilus (*see* ROACH)

S

SABLEFISH (*Anoplopoma fimbria*) (blackcod)
J 49(4) : 743 (environmental effects, climate, interspecific relationships, copepods, Vancouver I., B.C.)
(11) : 2313 (fishery economics, fishery management, quota regulations, NE Pac.)

Salmo salar (*see* SALMON, ATLANTIC)

SALMON (Pacific in general) (*Oncorhynchus* spp.)
J 49(8) : 1650 (parasitism, DNA, electrophoresis, stock identification, *Philonema*, B.C.)
(11) : 2377 (migrations, primary production, limiting factors, tributaries, L. Ontario)
(12) : 2551 (predation, models, juveniles, squawfish, Columbia R., WA)
TF 1807 (commercial fishing, data collections, manuals, computer programs)
MF 2013 (catch statistics, sport fishing, intertidal environment, B.C.)
2101 (catch statistics, trolling, B.C.)
2109 (sportfishing statistics, Strait of Georgia, NE Pac.)
DF 870 (fisheries surveys, fishways, biological data, Meziadin R., B.C.)
886 (sportfishing statistics, catch/effort, aerial surveys, angling, Fraser R., B.C.)

SALMON, ATLANTIC (*Salmo salar*)
J 49(1) : 46 (age determination, body size, scales, marine environment, St-Jean R., Que.)
(5) : 878 (lesions, blood vessels, growth rate)
(6) : 1097 (osmoregulation, sexual maturity, salinity tolerance)
(8) : 1704 (olfaction, chemical stimuli, smolts)
(9) : 1835 (feeding, rematuration, captivity)
: 1863 (stock identification, proteins, variations, Scotland)
: 1938 (acidification, geochemistry, snowmelt, rivers, Que.)
: 1953 (hybridization, natural populations, brown trout, Nfld.)
(10) : 2055 (reproduction, photoperiod, water temperature, environmental effects)
(11) : 2273 (sexual maturity, photoperiods, juveniles)
TF 1831 : 1 (aquaculture development, potential yield, historical account, Norway)
: 9 (aquaculture development, economics, historical account, Scotland)
: 21 (aquaculture development, temperature effects, historical account, Atl. Canada, ME)
: 85 (aquaculture techniques, selective breeding, economics)
1855 (survival, aquaculture techniques, environmental conditions, Saint John R., N.B., LaHave R., N.S.)
DF 860 (sportfishing statistics, angling, resource depletion, Maritime Provinces)
893 (catch statistics, summaries, Nfld., Labrador)
DH 115 (aquaculture facilities, water temperature, salinity, L'Etang Inlet, N.B.)
TS 5566 (aquaculture, biological data, hatcheries, Lower Luven'ga R., Russia)
EC 33 (aquaculture, economics, marketing, Maritime Provinces, Nfld.)

SALMON, CHINOOK (*Oncorhynchus tshawytscha*)
J 49(8) : 1670 (feeding behavior, summer, models, OR, WA)
(9) : 1883 (parasites, mortality causes, *Ceratomyxa shasta*, juveniles, Fraser R., B.C.)
(10) : 2164 (sport fishing, mortality, juveniles, Saanich Inlet, B.C.)
(11) : 2300 (life history, population genetics, photoperiods, juveniles)
(12) : 2621 (life history, habitat, juveniles, Situk R., AK)
MF 2128 (sportfishing statistics, angling, catch/effort, Fraser R., B.C.)
2141 (predation, stomach content, predators, rainbow trout, northern squawfish, mountain whitefish, bull trout, Nechako R., B.C.)
2147 (escapement, tagging, population structure, Kitsumkalum R., B.C.)
2152 (fishery surveys, escapement, resource conservation, Harrison R., B.C.)
2168 (tagging, escapement, stock assessment, Wannock R., B.C.)
2172 (escapement, fish counters, hatcheries, Stamp R., Robertson Creek, B.C.)
DF 786 (catchability, purse seining, sport

fishing, Saanich Inlet, B.C.)

SALMON, CHUM (*Oncorhynchus keta*)
J 49(11) : 2307 (migrations, deep water, geographical distribution, Iwate Prefecture, Japan)
DF 834 (fishery surveys, spawning populations, spawning grounds, Nekite R., B.C.)
874 (stock identification, proteins, fishery management, S B.C.)

SALMON, COHO (*Oncorhynchus kisutch*)
J 49(3) : 453 (swimming, marine environment, telemetry, N Pac.)
: 458 (stunting, osmoregulation, hormones)
: 540 (food webs, organic matter, forest streams, Deschutes R., WA)
(4) : 682 (habitat selection, habitat improvement, evaluation, Musqueam-Cutthroat Creek, B.C.)
: 783 (habitat selection, seasonal variations, juveniles, coastal zone, OR)
: 790 (habitat improvement, methodology, evaluation, juveniles, coastal zone, OR)
(7) : 1389 (sublethal responses, suspended sediments, Fraser R., B.C.)
: 1478 (habitat selection, migrations, aggregations, Carnation Creek estuary, B.C.)
(8) : 1670 (feeding behavior, summer, models, OR, WA)
(9) : 1816 (tagging, hatcheries, models)
: 1843 (homing behavior, straying, Vancouver I., B.C.)
(10) : 1972 (fishery management, escapement, spawning populations, rivers, B.C.)
: 2164 (sport fishing, mortality, juveniles, Saanich Inlet, B.C.)
(11) : 2399 (osmoregulation, salinity tolerance, swimming, juveniles)
TF 1785 (aquaculture techniques, sterility, polyploids)
1842 (production, colonization, hatcheries, Grant L., B.C.)
MF 2115 (tagging, migrations, trap fishing, smolts, Vancouver I., B.C.)
DF 786 (catchability, purse seining, sport fishing, Saanich Inlet, B.C.)
831 (tagging, migrations, trap fishing, smolts, Lachmach R., B.C.)
844 (tagging, migrations, trap fishing, smolts, Lachmach R., Antigonish Creek, B.C.)
871 (stock assessment, fish counters, juveniles, Lachmach R., B.C.)

SALMON, PINK (*Oncorhynchus gorbuscha*)
J 49(7) : 1294 (genetic effects, body size, experimental fishing, catching methods, B.C.)
: 1305 (genetic effects, body size, catching methods, analysis, B.C.)

SALMON, SOCKEYE (*Oncorhynchus nerka*)
J 49(1) : 99 (osmoregulation, population genetics, sympatric populations, kokanee, Shuswap L., B.C.)
(2) : 281 (population dynamics, genetics, models)
(6) : 1126 (spawning, channels, research programs, evaluation, B.C.)
(12) : 2498 (nutrient cycles, excretory products, phytoplankton, zooplankton)
TF 1797 (carrying capacity, evaluation, Pitt L., B.C.)
1798 (stock assessment, abundance, methodology, Henderson L., Vancouver I., B.C.)
1849 (population structure, life history, stock identification, B.C.)
1853 (survival, predation, production, stomach content, Pitt L., B.C.)
DF 833 (stock assessment, escapement, fall, Owikeno L., B.C.)
858 (echo surveys, escapement, fishery management, Rivers Inlet, B.C.)
864 (fishery statistics, midwater trawls, freshwater lakes, Fraser R. drainage)
872 (fishery surveys, fish counters, escapement, Docee R., B.C.)
883 (fishery surveys, escapement, stock assessment, Owikeno L., B.C.)

SALMONIDAE
J 49(6) : 1246 (habitat, geomorphology, deglaciation, South Fork Stillaguamish R., WA)
(10) : 1982 (escapement, spawning populations, methodology, rivers, B.C.)
(11) : 2337 (sediment transport, models, survival, embryos)
: 2345 (phylogenetics, analytical techniques, DNA)
SP 116 (diseases, disease control, cage culture, B.C., WA)
TF 1813 (habitat improvement, spawning grounds, bibliographies, Great Lakes, North America)
1831 (aquaculture development, aquaculture techniques, economics, conferences, World Waters)
: 37 (aquaculture development, potential yield, historical account, B.C.)
: 51 (aquaculture development, economics, historical account, Chile)
: 65 (aquaculture development, potential yield, historical account, Tasmania, Australia)
: 75 (aquaculture enterprises, disease detection, fishery protection, natural populations, Canada)
: 93 (aquaculture techniques,

selective breeding, Norway)
: 107 (aquaculture techniques, food composition, nutritional requirements)
: 125 (aquaculture techniques, fish meal, nutritional requirements, economics)
: 133 (aquaculture techniques, rearing, smolts)
: 141 (aquaculture techniques, growth regulators, proteins, peptides)
: 153 (aquaculture products, marketing, economics, USA, Japan)
TF 1858 (computer programs, tagging, data collections, coastal fisheries, B.C.)
TS 5571 (market research, fish consumption, trade, Japan)

Salvelinus alpinus (*see* CHAR, ARCTIC)
confluentus (*see* TROUT, BULL)
fontinalis (*see* TROUT, BROOK)
malma (*see* DOLLY VARDEN)
namaycush (*see* TROUT, LAKE)
spp. (*see* CHARS)

SAND LANCE, PACIFIC (*Ammodytes hexapterus*)
J 49(6) : 1137 (predation, vertical migrations, diurnal migrations, *Pseudocalanus newmani*, Dabob Bay, WA)

Sardine, South American (*see* PILCHARD)

Sardinops sagax (*see* PILCHARD)

SASKATCHEWAN (PROVINCE), CANADA
J 49(11) : 2281 (production, environmental effects, phytoplankton, saline lakes, Humboldt L., Redberry L.)

Scallop, giant (*see* SCALLOP SEA)

SCALLOP, ICELAND (*Chlamys islandica*)
MF 2154 (stock assessment, catch statistics, Nfld.)

SCALLOP, SEA (*Placopecten magellanicus*) (giant scallop)
J 49(7) : 1486 (environmental impact, scallop fisheries, American lobster, N.S.)
(8) : 1597 (environmental effects, physical oceanography, dispersion, larvae, Georges Bank, NW Atl.)
(10) : 2086 (orientation behavior, geographical distribution, natural populations, Nfld.)
MF 2123 (fishery surveys, population structure, tagging, juveniles, N.S.)
2148 (landing statistics, catch/effort, stock assessment, Gulf of St. Lawrence)
2154 (stock assessment, catch statistics, Nfld.)
EC 121F (economic analysis, landing statistics, marketing, Que.)

Scomber japonicus (*see* MACKEREL, CHUB)
scombrus (*see* MACKEREL, ATLANTIC)

Scophthalmus maximus (*see* TURBOT)

SCOTIA-FUNDY REGION, NORTHWEST ATLANTIC OCEAN
TF 1832 (conferences, aquaculture, biology, striped bass)
MF 2149 (computer programs, data collections, catch composition, American lobster)
EC 122 (fishery statistics, landing statistics, harvesting, fishery economics)

SCOTIAN SHELF, NORTHWEST ATLANTIC OCEAN
J 49(1) : 23 (echo surveys, population density, fishery management, haddock)
(2) : 238 (geographical distribution, eggs, spawning populations, Atlantic cod, haddock, witch flounder)
(10) : 2062 (parasitism, *Corynosoma wegeneri*, sealworm, demersal fishes)
(11) : 2222 (dispersion, stock assessment, population dynamics, haddock)
TF 1801 (fishery surveys, geographical distribution, larvae, American lobster)

SCOTLAND
J 49(9) : 1836 (stock identification, proteins, variations, Atlantic salmon)
TF 1831 : 9 (aquaculture development, economics, historical account, Atlantic salmon)

SCULPIN, SHORTHEAD (*Cottus confusus*)
J 49(3) : 540 (food webs, organic matter, forest streams, Deschutes R., WA)

SEA STAR (*Asterias rubens*)
TF 1863 : 39 (bioaccumulation, mercury, Sweden)

SEAL, HARP (*Phoca groenlandica*) (*Pagophilus groenlandicus*)
J 49(5) : 956 (parasites, stomach, nematodes, Nfld., Labrador)

SEAL, HOODED (*Cystophora cristata*)
J 49(12) : 2546 (aerial surveys, population number, pups, Gulf of St. Lawrence)

SEAL, RINGED (*Phoca hispida*) (*Pusa hispida*) (*Pusa hispida kraschenninnikovi*)
TS 5563 (parasites, lungs, new species, *Parafilaroides kraschenninnikovi*, Chuckchee Sea, Bering Sea)
5564 (parasitism, new species, *Parafilaroides arcticus*, Chuckchee Sea)

SEAL, SOUTH AFRICAN FUR (*Arctocephalus pusillus pusillus*)
J 49(7) : 1396 (fishery management, evaluation, models, South Africa)

SEALWORM (*Pseudoterranova decipiens*)
J 49(3) : 513 (parasites, *Neomysis americana*, *Gammarus oceanicus*, Wallace L., Sable I., N.S.)
(5) : 956 (parasites, stomach, harp seal, Nfld., Labrador)
(10) : 2062 (parasitism, demersal fishes, Scotian Shelf, NW Atl.)

Sebastes alutus (*see* PERCH, PACIFIC OCEAN)
entomelas (*see* ROCKFISH, WIDOW)
spp. (*see* ROCKFISHES)

Semotilus margarita (*see* DACE, PEARL)

SHAD, AMERICAN (*Alosa sapidissima*)
J 49(2) : 266 (stock identification, meristic counts, morphology, Cumberland Basin, N.S.)
(9) : 1826 (tags, survival, turbines)

SHAD, GIZZARD (*Dorosoma cepedianum*)
J 49(6) : 1216 (food webs, predation, zooplankton, Kokosing L., OH)
(7) : 1466 (biomass, plankton feeders, primary production)
(8) : 1722 (trophic relationships, food webs, particulate organic carbon, Sardis Reservoir, MS)

SHARK, SANDBAR (*Carcharhinus plumbeus*)
J 49(7) : 1474 (age determination, growth, tagging, NW Atl.)

SHELLFISH (*see also* names of species)
TS 5554 (quality control, processing fishery products, hygiene, Iceland)

SHELLFISH FISHERIES
TF 1882 (economic analysis, shellfish closures, bacterial diseases, Mollusca, P.E.I.)
MF 2144 (landing statistics, historical account, B.C.)

SHINER, GOLDEN (*Notemigonus crysoleucas*)
J 49(4) : 813 (feeding behavior, prey selection, larvae)

SHIPWORMS (Mollusca)
SP 115 (boring organisms, biological damage, pest control, B.C.)

SHRIMP, AESOP (*Pandalus montagui*)
J 49(3) : 565 (feeding behavior, vertical distribution, pelagic environment, Resolution I., E Hudson Strait, Arctic)
(5) : 842 (echo surveys, geographical distribution, vertical distribution, Resolution I., Hudson Strait, Arctic)

SHRIMP, NORTHERN (*Pandalus borealis*)
J 49(1) : 32 (biomass, mapping, methodology, Gulf of St. Lawrence)
(2) : 368 (lipids, growth, survival, larvae)
EC 79 (economic analysis, exploitation, resource development, Canada)

SHRIMP, OCEAN (*Pandalus jordani*) (smooth pink shrimp)
J 49(12) : 2648 (demersal fisheries, trawling, WA, OR)

SHRIMP, OPOSSUM (*Mysis relicta*)
J 48(1) : 67 (vertical migrations, diurnal variations, acoustic surveys, Okanagan L., B.C.)

Shrimp, smooth pink (*see* SHRIMP, OCEAN)

SIMULIIDAE (Diptera) (blackflies)
J 49(4) : 833 (pollution effects, acidification, larvae)

SNAPPER, RUBY (*Etelis carbunculus*) (ehu)
J 49(4) : 795 (morphology, otoliths, regional variations, S Pac.)

SOFTSHELL (*Mya arenaria*) (softshell clam)
MF 2090 (stock assessment, fishery surveys, fishery management, Cole Harbour, N.S.)

SOLE, DOVER (*Microstomus pacificus*)
J 49(12) : 2648 (demersal fisheries, trawling, WA, OR)

SOLE, ENGLISH (*Pleuronectes vetulus*) (*Parophrys vetulus*)
MF 2133 (histology, ovaries, Hecate Strait, NE Pac.)

SOUTH AFRICA
J 49(7) : 1396 (fishery management, evaluation, models, South African fur seal)

SOUTH ATLANTIC OCEAN
TS 5553 (new species, taxonomy, parasites, *Bolbosoma tuberculata*)

SOUTH CAROLINA STATE, USA
J 49(3) : 609 (fecundity, population density, predation, *Microarthridion littorale*, North Inlet)
(9) : 1778 (selective breeding, body size, larvae, females, striped bass)

SPAIN
J 45(5) : 945 (limnology, organic matter, ice cover, L. Redó)

SPORT FISHING
J 49(6) : 1157 (angling, biological stress, air exposure, rainbow trout)
(10) : 2164 (mortality, juveniles, coho salmon, chinook salmon, Saanich

Inlet, B.C.)
(S1) : 87 (pollution effects, sulphur dioxide, mining, lake trout, brook trout, smallmouth bass, walleye, Sudbury, Ont.)
MF 2013 (catch statistics, intertidal environment, census, Pacific salmons, B.C.)
2109 (catch statistics, demersal fisheries, Pacific salmons, Strait of Georgia, B.C.)
2128 (catch statistics, angling, catch/effort, chinook salmon, Fraser R., B.C.)
DF 786 (catchability, coho salmon, chinook salmon, Saanich Inlet, B.C.)
860 (catch statistics, angling, resource depletion, Atlantic salmon, Maritime Provinces)
886 (catch statistics, catch/effort, aerial surveys, angling, Pacific salmons, char, sturgeon, Fraser R., B.C.)

SPRAT (*Sprattus sprattus*)
TS 5580(2) (population characteristics, seasonal variations, Kiel Bay, Baltic Sea)

Sprattus sprattus (*see* SPRAT)

Squalus acanthias (*see* DOGFISH, SPINY)

SQUAWFISH, NORTHERN (*Ptychocheilus oregonensis*)
J 49(12) : 2551 (predation, models, juveniles, Pacific salmons, Columbia R., WA)
MF 2141 (predators, chinook salmon, Nechako R., B.C.)

SQUID, FLYING (*Ommastrephes bartrami*) (*Ommastrephes pacificus*)
TS 5573 (organoleptic properties, quality control, tests)

SQUID, SHORT-FINNED (*Illex illecebrosus*)
TF 1860 (biological sampling, biological data, population structure, Nfld.)
DH 111 (fishery surveys, oceanographic data, biological data, S FL)

Squids (*see* CEPHALOPODA)

ST. LAWRENCE, GULF OF
J 49(1) : 32 (biomass, mapping, methodology, northern shrimp)
(2) : 202 (biomass, trap nets, time series analysis, Atlantic cod)
: 349 (environmental impact, harvesting, frond density, biomass, Irish moss, S Gulf of St. Lawrence)
(5) : 857 (environmental effects, outflow waters, community composition, zooplankton)
(7) : 1282 (moulting, reproduction, snow crab)
(11) : 2232 (migrations, echo surveys, advection, Atlantic mackerel, Brador Bay)
(12) : 2538 (stock identification, DNA, biopolymorphism, American plaice)
: 2546 (aerial surveys, population number, pups, hooded seal)
TF 1830F (environmental impact, habitat, commercial fishing)
1833F (fishery management, gear selectivity, waved whelk, Magdalen Is.)
1847 (fishery development, historical account, snow crab, SW Gulf of St. Lawrence)
1886F (crab fisheries, shells, decalcification, snow crab)
MF 2126F (research programs, population dynamics, pollution effects, conferences, white whale)
2148 (landing statistics, catch/effort, stock assessment, sea scallop)
EC 105F (fishery statistics, fishery economics, fishery management)

ST. LAWRENCE RIVER; ST. LAWRENCE RIVER ESTUARY
J 49(7) : 1336 (growth, periodicity, sexual maturity, females, lake sturgeon, St. Lawrence R.)
(9) : 1959 (stock identification, morphology, meristic counts, lake sturgeon, St. Lawrence R.)
TF 1776 (aerial surveys, census photography, white whale, St. Lawrence R. estuary)
1822 (zooplankton, introduced species, monitoring, surface craft, St. Lawrence R.)
1830F (environmental impact, habitat, commercial fishing, St. Lawrence R.)
1845F (environmental impact, pollutants, habitat, white whale, St. Lawrence R. estuary)
1851F (chlorine compounds, inventories, sediments, Laurentian Trough, St. Lawrence R. estuary)
1863 : 67 (sediment pollution, indicator species, heavy metals, Amphipoda, St. Lawrence R.)
1870F (fishery surveys, intertidal environment, population number, St. Lawrence R. estuary)
DH 103F (pollution, hydrocarbons, sediments, methodology, St. Lawrence R.)

STARFISH, POLAR (*Leptasterias polaris*)
TF 1863 : 49 (bioaccumulation, mercury, transport processes)

Stizostedion lucioperca (*see* ZANDER)
vitreum vitreum (*see* WALLEYE)

Stoneflies (*see* PERLODIDAE)

STURGEON, LAKE (*Acipenser fulvescens*)
J 49(7) : 1336 (growth, periodicity, sexual maturity, females, St. Lawrence R.)

(9) : 1959 (stock identification, morphology, meristic counts, Lac Deux Montagnes, Que., St. Lawrence R.)

STURGEON, WHITE (*Acipenser transmontanus*)
J 49(2) : 358 (stock identification, DNA, geographical isolation, environmental impact, Fraser R., B.C.)

STURGEONS (*Acipenser* spp.)
DF 886 (sportfishing statistics, catch/effort, aerial surveys, angling, Fraser R., B.C.)

SUCKER, WHITE (*Catostomus commersoni*)
J 49(4) : 735 (bioavailability, dioxins, enclosures, Experimental Lakes Area, NW Ont.)
(5) : 978 (bioaccumulation, copper, zinc, pollution detection)
TF 1863 : 190 (pollution effects, pulp wastes, pollution control, Jackfish Bay, Ont.)
DF 875 (biological data, catch composition, gillnets, Dauphin L., Man.)

SUPERIOR, LAKE, NORTH AMERICA
J 49(8) : 1560 (pollution effects, pulp wastes, physiology, lake whitefish)
: 1616 (new records, introduced species, ruffe, St. Louis R.)
(9) : 1902 (stock identification, DNA, cell organelles, bloater, lake herring)

SWEDEN
J 49(1) : 65 (acidification, buffers, paleolimnology, diatoms, Lysevatten L.)
TF 1863 : 39 (bioaccumulation, mercury, sea star)

T

TENNESSEE STATE, USA
J 49(3) : 504 (production, periphyton, nutrients, grazing, Clinch R.)

Theragra chalcogramma (*see* POLLOCK, WALLEYE)

Thymallus arcticus (*see* GRAYLING, ARCTIC)

TILAPIA (*Oreochromis* spp.)
J 49(4) : 701 (growth rate, scales, osseoid layer)

TOXICITY (*see also* POLLUTION)
J 49(1) : 85 (neurotoxins, domoic acid, plankton, experimental culture)
: 116 (aluminum, paleolimnology, fishery resources, algae, Adirondack region, NY)
(2) : 303 (morphology, plankton, domoic acid, *Nitzschia pungens* f. *multiseries*, P.E.I.)
: 312 (depuration, domoic acid, blue mussel, P.E.I.)
: 400 (bioaccumulation, domoic acid, models, blue mussel, Cardigan Bay, P.E.I.)
(6) : 1268 (bioassays, regeneration, limbs, Harris mud crab)
(7) : 1389 (suspended sediments, sublethal responses, coho salmon, Fraser R., B.C.)
(8) : 1633 (toxicity tests, bicarbonates, pore water, cladocerans, Grand Calumet R., MI)
(10) : 2070 (cadmium, zinc, juveniles, Eurasian minnow)
TF 1784 (aromatic hydrocarbons, embryonic development, rainbow trout)
1799 (conferences, algal blooms, biological poisons, marine environment, Canada)
1863 (toxicology, aquatic environment, environmental monitoring, conferences, World Waters)
: 2 (toxicity tests, environmental legislation, evaluation, conferences)
: 27 (mercury, sediment pollution, sulphur, Saguenay Fjord)
: 39 (bioaccumulation, mercury, sea star, Sweden)
: 49 (bioaccumulation, mercury, transport processes, polar starfish)
: 67 (indicator species, sediment pollution, heavy metals, Amphipoda, St. Lawrence R.)
: 87 (bioaccumulation, mercury, indicator species, yellow perch, common loon, lakes, Ont.)
: 169 (toxicity tests, environmental monitoring, aquatic plants, methodology)
: 175 (toxicity tests, dispersants, oil removal, models, marine organisms)
: 190 (pollution effects, pulp wastes, pollution control, lake whitefish, white sucker, Jackfish Bay, Ont.)
: 200 (environmental monitoring, water quality, environmental protection, criteria, Que.)
: 222 (toxicity tests, sediments, marine environment, brackishwater environment, Amphipoda, Canada Coasts)
: 272 (bioaccumulation, chromium, marine organisms, Qaqortoq, Greenland)
: 299 (heavy metals, chlorine compounds, aquatic organisms, Que.)
: 317 (toxicity tests, sulfides, sediments, Jack L., Ont.)
: 325 (pollution effects, cadmium, biochemistry, giant floater)
: 330 (pollution effects, bioaccumulation, manganese, chelates, brown trout)
TH 135 (algal blooms, environmental

monitoring, conferences, B.C.)

TREMATODA
TS 5565 (taxonomy, new genera, revision, *Didymocystis, Didymosulcus*)

TRICHOPTERA (caddisflies)
J 49(1) : 142 (genotypes, biological resistance, mercury, *Nectopsyche albida*)
: 147 (genotypes, biological resistance, mercury, *Nectopsyche albida*)
(2) : 259 (local movements, seasonal variations, body size, larvae, *Hydropsyche slossonae*)
(6) : 1257 (competition, food availability, controlled conditions, club elimia)
(11) : 2354 (habitat improvement, food webs, oligotrophic lakes, Saqvaqjuac, N.W.T.)

TROPICS
J 49(2) : 218 (age, growth, statocysts, cephalopods)

TROUT, BROOK (*Salvelinus fontinalis*)
J 49(3) : 597 (yield predictions, regression analysis, chemical limnology, lakes, Adirondack region, NY)
(5) : 870 (seasonal variations, diurnal variations, blood parameters)
: 1001 (food, prey selection, models, Que.)
(10) : 2093 (trophic relationships, food webs, predation, rivers, Que.)
(12) : 2566 (feeding behavior, activity patterns, bioenergetics)
(S1) : 87 (pollution effects, sulphur dioxide, sport fishing, Sudbury, Ont.)

TROUT, BROWN (*Salmo trutta*)
J 49(6) : 1107 (recruitment, population density, allopatric populations, L. Løyning, Norway)
(7) : 1328 (food consumption, approximation, methodology)
(8) : 1539 (catchability, gillnets, population density, Norway)
: 1546 (gear selectivity, gillnets, catchability, models, L. Løyning, Norway)
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- 1824

Fulton, J. - J 49(2) : 389

G

Gagnon, C. - TF 1863 : 27

Gagnon, M. - TF 1870F

Gagnon, M. M. - TF 1829

Gala, W. R. - J 49(8) : 1633

Galkina, G. G. - TS 5552

Gall, G. A. E. - J 49(7) : 1507

Gallant, C. - TF 1886F

Galloway, T. D. - J 49(9) : 1788

Gargett, A. E. - DH 68

Gaulin, H. - EC 118F

Gauvin, D. - TF 1863 : 299

Gearing, J. N. - DH 103F

Geiling, S. - TF 1875

Gendron, L. - TF 1833F

Giberson, D. J. - TF 1837

Gibson, K. - J 49(10) : 2128

Giesy, J. P. - J 49(8) : 1633

Giguère, L. A. - J 49(1) : 46

Gildberg, A. - TS 5575

Gillis, D. M. - J 49(7) : 1294

Glahder, C. M. - TF 1863 : 272

Glooschenko, V. - J 49(S1) : 114

Gobeil, C. - TF 1851F

Goddard, S. V. - J 49(3) : 516
- (12) : 2588

Goff, G. P. - J 49(4) : 754

Gollner, M. C. - TF 1802

Gomulkiewicz, R. - J 49(7) : 1507

Gordoa, A. - J 49(10) : 1990

Gordon, D. C. Jr. - TF 1799

Goruk, R. D. - DF 833
- 834
- 872
- 883

Gould, A. P. - DF 874

Gould, L. K. - DF 855
- 856
- 875

Govers, H. - J 49(4) : 655

Goyette, D. - J 49(7) : 1336

Graça, M. J. - DH 96

Grafton, R. Q. - J 49(3) : 497

Grapentine, L. C. - J 49(1) : 52

Gray, B. - TF 1784

Gray, R. W. - J 49(10) : 2055

Griffiths, R. W. - J 49(S1) : 63
- : 76

Guay, I. - TF 1863 : 200

Guckert, J. B. - J 49(12) : 2579

Guénette, S. - J 49(7) : 1336
- (9) : 1959

Gui, Q. Y. - DH 105

Gulseth, O. A. - J 49(3) : 443

Gunderson, D. R. - J 49(10) : 2028

Gunn, J. M. - J 49(S1) : 87
- : 95
- : 102

Guptill, F. - DH 85
- 86
- 87
- 88
- 89

Guttman, S. I. - J 49(1) : 142
- : 147

H

Haist, V. - MF 2119
- 2146

Haley, R. K. - J 49(5) : 939

Hall, C. A. S. - J 49(11) : 2377

Hall, R. J. - J 49(4) : 833

Hall, T. J. - J 49(5) : 939

Halvorsen, M. - J 49(2) : 229

Hambrook, M. J. - J 49(10) : 2055

Hamer, J. M. - TF 1858

Hamer, L. - DF 865

Hamilton, E. A. - TF 1875

Hammill, M. O. - J 49(12) : 2546
- TF 1776

Hand, C. - MF 2135

Hand, C. M. - MF 2106
- DF 866

Hanic, L. A. - J 49(2) : 303

Hansen, A. K. - TS 5556

Hansen, H. J. - J 49(9) : 1938

Hansen, T. - TF 1831 : 1

Harding, G. C. - TF 1885
- 1887

Hargrave, B. T. - DF 879

Harland, R. - TH 103

Hartley, K. A. - TF 1813

Harvey, H. H. - J 49(6) : 1228

Haux, C. - J 49(10) : 2070

Havens, K. E. - J 49(11) : 2392
- (12) : 2507

Hay, D. W. - J 49(9) : 1863

Hayes, M. A. - TF 1863 : 106

Hazel, F. - J 49(7) : 1282

He, X. - J 49(6) : 1176

Healey, M. C. - J 49(4) : 820

Heberger, R. F. - J 49(10) : 2009

Hébert, M. - TF 1847
- 1847F
- 1886F

Hecky, R. E. - J 49(12) : 2434

Heincke, F. - TS 5580(2)

Heisey, P. G. - J 49(9) : 1826

Hemming, C. - DF 861

Henderson, M. A. - TF 1797
- 1853

Herman, A. W. - J 49(5) : 857

Hiatt-Saif, M. - TF 1856

Hickey, B. M. - J 49(10) : 2028

Hilborn, R. - J 49(6) : 1126

Hill, W. R. - J 49(3) : 504
- (6) : 1257

Hinch, S. G. - TF 1821

Hinterleitner, S. - J 49(1) : 110

Hirano, T. - J 49(3) : 458

Hirst, S. M. - MF 2093(2)

Hobbs, R. C. - J 49(7) : 1379

Hodson, P. V. - TF 1784
- 1829

Hogstrand, C. - J 49(10) : 2070

Hoke, R. A. - J 49(8) : 1633
- (10) : 2080

Holden, I. G. - DH 85
- 86
- 87
- 88
- 89

Holladay, J. S. - TH 139
- CH 41

Holmes, M. A. - TF 1807
- 1858

Holomuzki, J. R. - J 49(11) : 2322

Holtby, L. B. - J 49(7) : 1478
- (10) : 2164
- DF 871

Hop Wo, L. - DF 874

Hopky, G. E. - J 49(1) : 2
- DF 857

Horppila, J. - J 49(8) : 1555

House, R. A. - J 49(10) : 2009

Houthuijzen, R. P. - J 49(5) : 894

Howard, D. E. - TF 1863 : 317

Howell, T. - J 49(S1) : 52

Huang, C. - J 49(7) : 1366

Huber, M. - J 49(1) : 110

Hudon, C. - J 49(3) : 565
- (5) : 842
- MF 2165

Hudson, J. J. - J 49(11) : 2412

Hughes, J. S. - TF 1863 : 169

Hughes, N. F. - J 49(10) : 1994
- : 1999

Hultberg, H. - J 49(1) : 65

Hume, J. - TF 1797

Hume, J. M. B. - DF 863
- 864

Humphreys, R. - J 49(11) : 2386

Hunter, C. M. - MF 2149

Hurley, D. A. - J 49(11) : 2249

Hurley, P. C. F. - J 49(2) : 238

Huse, I. - J 49(4) : 754

Hyatt, K. D. - TF 1798
- 1849

I

Idler, D. R. - J 49(9) : 1835
- (10) : 2190

Ihssen, P. E. - J 49(9) : 1770

Irvine, J. R. - J 49(10) : 1972
- : 1982
- MF 2115

Iseki, K. - J 49(4) : 663
- DH 60(8)

Ishida, Y. - J 49(3) : 453

J

Jackson, D. A. - J 49(6) : 1228

Jackson, G. D. - J 49(2) : 218

Jacobson, L. D. - J 49(12) : 2515

James, W. F. - J 49(4) : 694

Jarboe, H. H. - J 49(5) : 1070

Jayaram, M. G. - J 49(11) : 2267

Jensen, K. M. - J 49(6) : 1189

Jessop, B. M. - MF 2136

Jessop, E. F. - TF 1811
- MF 2125

Johannes, M. R. S. - J 49(8) : 1588

Johannessen, T. - TS 5577

Johansson, T. - DF 866

Johnsen, P. B. - J 49(11) : 2406

Johnson, A. - J 49(6) : 1246

Johnson, G. - J 49(2) : 312

Johnson, M. G. - TF 1865

Johnson, S. - J 49(9) : 1924

Johnson, S. L. - J 49(4) : 783
- : 790

Johnson, S. W. - J 49(12) : 2621

Johnston, C. E. - J 49(9) : 1835
- (10) : 2055

Johnston, T. A. - TF 1841

Jones, E. P. - TH 138

Jones, J. R. - J 49(6) : 1198

Jones, R. A. - DF 893

Jones, R. D. - J 49(3) : 577

Jonsson, B. - J 49(7) : 1328

Jordan, W. C. - J 49(9) : 1863

Jorgenson, J. K. - J 49(11) : 2354

Jude, D. J. - J 49(2) : 416

Jungalwalla, P. J. - TF 1831 : 65

K

Kadowaki, R. K. - J 49(10) : 2164
- DF 786

Kaiser, K. L. E. - TF 1784

Kakuda, K. - TS 5573

Kalarani, V. - J 49(6) : 1142

Kalff, J. - J 49(7) : 1431
- (12) : 2483
- : 2490

Kalnin, L. W. - MF 2152

Kaluzny, S. - J 49(7) : 1366

Kao, M. H. - J 49(3) : 516
- (12) : 2588

Keast, M. A. - DF 857

Keeley, J. R. - TH 105

Keller, W. - J 49(S1) : 3
- : 25
- : 40
- : 52
- : 63

Kelly, C. A. - J 49(1) : 17

Kelso, J. R. M. - TF 1813

Kemp, A. - TF 1875

Kenchington, E. - MF 2123

Kennen, J. G. - J 49(11) : 2377

Kent, M. L. - SP 116

Kerans, B. L. - J 49(2) : 259

Kerfoot, P. - MF 2143

Kerkum, F. C. M. - J 49(11) : 2291

Kerr, S. R. - TF 1867

Kidachi, T. - J 49(9) : 1796

Kilpatrick, J. S. - TF 1831 : 125

Kingsley, M. C. S. - TF 1776
- MF 2126F

Kingston, J. C. - J 49(1) : 116
- : 128

Kirby, G. M. - TF 1863 : 106

Kishida, T. - J 49(9) : 1796

Kishino, H. - J 49(8) : 1573

Kitada, S. - J 49(8) : 1573

Kleinow, K. M. - J 49(5) : 1070

Kloepper-Sams, P. J. - TF 1829

Knox, D. E. - J 49(5) : 878

Kope, R. G. - J 49(5) : 931

Korneliussen, T. - TS 5571

Koski, K V. - J 49(12) : 2621

Koslow, J. A. - J 49(2) : 210

Kraft, C. E. - J 49(12) : 2596

Kristjansson, G. J. - TS 5554

Kristofferson, A. - DF 861

Kronlund, A. R. - J 49(9) : 1801

Kuris, A. M. - J 49(2) : 327

Kusakabe, Y. - TF 1831 : 153

Kusser, W. C. - J 49(5) : 967

Kuwabara, J. S. - J 49(6) : 1206

Kuwahara, A. - TS 5559

Kwak, T. J. - J 49(7) : 1417

L

Labelle, M. - J 49(9) : 1843
- (10) : 1972

Lacasse, S. - J 49(5) : 1001

Lacho, G. - DF 853

Lackner, R. - J 49(1) : 110

Lafferty, K. D. - J 49(2) : 327

Lall, S. P. - TF 1831 : 107

Lalonde, S. - J 49(5) : 992

Lalumiere, L. A. - TH 139
- CH 41

Landry, T. - TF 1862

Lanfersieck, J. - J 49(11) : 2313

Lanteigne, M. - MF 2148
- 2154

Lapointe, M. F. - J 49(10) : 2020

Lapointe, V. - MF 2156F

Larimore, R. W. - J 49(7) : 1417

Larinier, M. - TS 5561

Larouche, P. - DH 113F

Larsen, R. D. - J 49(9) : 1902

Lauzier, P. - EC 84F

Lauzier, R. - MF 2141

Lauzier, R. B. - MF 2143

Lavoie, G. - J 49(1) : 32

Lawrence, M. J. - TF 1838
- DF 857

Lazier, J. R. N. - DH 96

Lazzaro, X. - J 49(7) : 1466

Leach, J. H. - J 49(2) : 406

Leaman, B. M. - J 49(4) : 632

Lean, D. R. S. - J 49(2) : 252

Lebeuf, M. - TF 1851F

Lech, J. J. - J 49(5) : 1070

Leclerc, J. - J 49(7) : 1336

Lee, J. - J 49(1) : 159

Legault, J. A. - TF 1882

Legendre, P. - J 49(1) : 32

Leggett, W. C. - J 49(3) : 467
- (10) : 2179
- (11) : 2232

Lemieux, P. - DF 861

Lévesque, P. - MF 2173(Rev.)

Levings, C. D. - MF 2143

Levy, D. - TF 1797

Lewis, J. - J 49(11) : 2337

Lewis, W. M. - J 49(1) : 173

Likely, C. G. - J 49(2) : 347

Lindesjöö, E. - J 49(1) : 166

Lindsey, C. C. - J 49(4) : 760
- : 769

Lints, D. - J 49(5) : 1060

Lisle, T. E. - J 49(11) : 2337

Liu, J. - TS 5570

Liu, Y. - TS 5569
- 5576

Lloyd, S. W. - J 49(11) : 2406

Lo, N. C. H. - J 49(12) : 2515

Locke, A. - TF 1822

Lockhart, W. L. - TF 1829

Loder, J. W. - J 49(3) : 467

Loenko, A. A. - TS 5566

Lohman, K. - J 49(6) : 1198

Low, G. - DF 878

Luedke, W. H. - DF 874

Lumb, G. - J 49(6) : 1268

Lundqvist, H. - J 49(6) : 1097

Luoma, S. N. - J 49(10) : 2141

Luxon, P. L. - TF 1829

Lyrholm, T. - J 49(1) : 78

Lysfjord, G. - J 49(3) : 443

M

MacDonald, B. A. - J 49(10) : 2086

MacDonald, J. K. - EC 79

Macdonald, R. W. - J 49(4) : 663
- DH 60(8)
- 104
- 112

MacIsaac, E. A. - TF 1802

Mackas, D. L. - J 49(5) : 903

MacKay, L. E. - J 49(2) : 422

Mackay, R. J. - J 49(3) : 617

MacPhee, D. J. - J 49(2) : 303

Madhyastha, M. S. - J 49(2) : 312

Maeda, M. - J 49(11) : 2373

Magnan, P. - J 49(5) : 1001
- (11) : 2242

Magnuson, J. J. - J 49(7) : 1493
- (12) : 2474

Maheu, S. - TF 1863 : 49

Makarova, N. P. - TS 5562

Mallet, M. - TF 1741F

Mallet, P. - TF 1886F

Malme, C. I. - J 49(7) : 1343
- : 1357

Mangel, M. - J 49(7) : 1507

Manzi, J. J. - J 49(12) : 2574

March, K. L. - DH 85
- 86
- 87
- 88
- 89

Marcogliese, D. J. - J 49(3) : 513
- (10) : 2062

Marcotte, D. - J 49(1) : 32

Margolis, L. - J 49(8) : 1650
- (9) : 1883
- TF 1849

Marquis, H. - TF 1830F

Marsden, J. E. - J 49(7) : 1501

Marshall, D. - DF 861

Marshall, G. W. - TF 1860

Martens, D. W. - J 49(7) : 1389

Martin, A. P. - J 49(11) : 2386

Martin, A. R. - J 49(3) : 462

Martin, G. W. - J 49(9) : 1770

Mason, C. S. - DH 85
- 86
- 87
- 88
- 89

Mathias, J. A. - TF 1841

Mathur, D. - J 49(9) : 1826

Matsuda, H. - J 49(9) : 1796

Matuszek, J. E. - J 49(S1) : 87

May, B. - J 49(7) : 1501

Mayrand, E. - TF 1863 : 325

McAllister, M. K. - J 49(7) : 1294
- : 1305

McCauley, E. - J 49(12) : 2605

McClelland, G. - J 49(10) : 2062

McConnaughey, R. A. - J 49(10) : 2028

McCormick, J. H. - J 49(6) : 1189

McCullough, D. - DH 60(8)

McDonald, T. E. - J 49(9) : 1883
- TF 1849

McDowell, W. H. - J 49(11) : 2377

McFarlane, G. A. - J 49(4) : 708
- : 743
- (8) : 1657

McGowan, C. - J 49(9) : 1953

McGowan, D. K. - DF 867
- 878

McGurk, M. D. - J 49(5) : 967

McKellar, G. D. - MF 2176

McKenzie, J. A. - J 49(2) : 266

McKeown, B. A. - J 49(4) : 780

McKeown, D. L. - TH 136

McLaughlin, F. A. - DH 104
- 112

McLean, E. - TF 1785

McLeay, D. J. - TF 1863 : 222

McMahon, T. E. - J 49(7) : 1478

McMaster, M. E. - J 49(8) : 1560
- TF 1836
- 1863 : 190

McMillan, D. - J 49(3) : 484

McNichol, D. K. - J 49(S1) : 122

McQueen, D. J. - J 49(8) : 1588

Meals, K. O. - J 49(8) : 1722

Melvin, G. D. - J 49(2) : 266

Ménard, Y. - TF 1870F

Mercer, M. C. - TF 1860

Methven, D. A. - J 49(4) : 754

Metner, D. A. - TF 1829

Millar, R. B. - J 49(8) : 1624
- (10) : 2104

Miller, C. B. - J 49(2) : 389

Miller, D. E. - J 49(8) : 1722

Miller, P. A. - J 49(5) : 978

Miller, R. J. - J 49(7) : 1486
- TF 1801
- MF 2165

Miller, T. J. - J 49(4) : 805

Mills, E. L. - J 49(8) : 1588
- (10) : 2009

Ministère des Pêches et des Océans - EC 33F
- 105F

Miralles, A. - TS 5561

Miskimmin, B. M. - J 49(1) : 17

Mittelbach, G. G. - J 49(9) : 1908

Mohn, R. - MF 2123

Mohr, L. C. - DF 846

Molot, L. A. - J 49(11) : 2363
- (S1) : 52

Montgomerie, A. - J 49(12) : 2630

Moon, T. W. - J 49(11) : 2260

Moore, T. R. - J 49(6) : 1236

Moreau, G. - J 49(10) : 2093

Morin, A. - J 49(3) : 532
- (8) : 1695
- TS 5560

Morin, P.-P. - J 49(8) : 1704

Moriyasu, M. - TF 1847
- 1847F
- 1886F

Morris, J. F. T. - J 49(4) : 820

Morris, J. R. - J 49(S1) : 95

Morris, J. T. - J 49(3) : 609

Morton, K. - TF 1797

Mountain, D. - J 49(3) : 484

Mucci, A. - TF 1863 : 27

Mueller, C. W. - DF 863
- 864

Muir, D. C. G. - J 49(4) : 722
- : 735
- MF 2140

Mulligan, T. J. - J 49(2) : 319
- (4) : 632

Mullins, C. C. - DF 893

MunKittrick, K. R. - J 49(5) : 978
- (8) : 1560
- TF 1829
- 1836
- 1863 : 978

Munro, A. L. S. - TF 1831 : 9

Munro, J. - J 49(6) : 1149

Myers, R. A. - J 49(12) : 2546

N

Næumann, R. - J 49(7) : 1328

Nævdal, G. - TF 1831 : 93

Nakamoto, L. - J 49(S1) : 40

Nakashima, B. S. - J 49(11) : 2423

Nass, B. L. - MF 2147
- 2172

Natanson, L. J. - J 49(7) : 1474

Neary, B. P. - J 49(2) : 406
- (11) : 2363

Neilson, J. D. - J 49(10) : 2118

Nelson, J. A. - J 49(12) : 2474

Nelson, R. W. P. - TH 142

Nelson, W. O. - J 49(9) : 1938

Ni, I-H. - J 49(5) : 956

Nickelson, T. E. - J 49(4) : 783
- : 790

Nicolls, K. H. - J 49(S1) : 40

Niederlehner, B. R. - J 49(10) : 2155

Niimi, A. J. - TF 1863

Nijjar, M. S. - J 49(2) : 312

Nilssen, K. J. - J 49(2) : 229

Noël, D. - TF 1847
- 1847F

Noël, M. - DH 103F

Nogami, K. - J 49(11) : 2373

Nold, S. C. - J 49(12) : 2579

Noone, F. - DH 5(20) (Part 1)
- (Part 2)
- (22)

Norberg, B. - J 49(4) : 754

Northcote, T. G. - J 49(4) : 682

Novaczek, I. - J 49(2) : 312

Nowak, R. - TF 1892

O

Oakey, N. S. - DH 110

O'Brien, J. P. - MF 2163

O'Brien, M. C. - J 49(4) : 663
- DH 60(8)
- 104
- 112

O'Brien, W. J. - J 49(4) : 813

O'Gorman, R. - J 49(10) : 2009

Ogura, M. - J 49(3) : 453

Okiyama, M. - TS 5558

O'Neil, S. F. - DF 860

Oosthuizen, W. H. - J 49(7) : 1396

Orr, J. R. - TF 1856

Osborne, L. L. - J 49(4) : 671
- (7) : 1417

Osgood, M. P. - J 49(9) : 1916

Ouellet, P. - J 49(2) : 368

P

Pace, M. L. - J 49(5) : 1060
- (7) : 1455

Padilla, D. K. - J 49(1) : 150
- (12) : 2611

Palumbi, S. R. - J 49(11) : 2386

Papst, M. H. - J 49(1) : 2

Paranjape, M. A. - TF 1844

Parisella, R. - TF 1784

Parker, B. R. - J 49(3) : 584

Parker, H. A. - MF 2136

Parsons, D. G. - J 49(3) : 565
- (5) : 842

Pasilis, S. P. - J 49(6) : 1206

Patalas, K. - J 49(5) : 1035
- DF 868

Paterson, M. - TF 1838

Paton, D. - DH 112

Paton, D. W. - DH 104

Patterson, K. R. - J 49(9) : 1762

Pawson, T. W. - J 49(2) : 422

Payne, J. F. - TF 1829

Payzant, L. - DH 85
- 86
- 87
- 88
- 89

Pearcy, W. G. - J 49(8) : 1670

Pearson, R. - DH 104
- 112

Pearson, W. H. - J 49(7) : 1343
- : 1357

Pellerin-Massicotte, J. - TF 1863 : 325

Pelletier, E. - TF 1845F
- 1863 : 27
- : 39
- : 49
- : 330

Peltonen, H. - J 49(8) : 1555

Pennell, W. - TF 1831

Penney, R. W. - IF 212

Pereira, D. L. - J 49(2) : 293

Perkins, B. D. - J 49(6) : 1198

Peterman, R. M. - J 49(7) : 1294
- : 1305
- (10) : 2020

Peters, R. H. - J 49(5) : 975

Petersen, J. H. - J 49(12) : 2551

Peterson, B. J. - J 49(9) : 1890

Peterson, I. K. - TH 141

Peterson, R. H. - TF 1832

Petrie, B. - DH 102
- 132

Petrie, L. - DH 111
- 115

Petrie, W. M. - DH 99

Petticrew, E. L. - J 49(12) : 2483

Pettigrew, B. - DH 113F

Pettipas, R. G. - DH 110

Pezzack, D. S. - MF 2165

Phillips, G. A. - DF 879

Phillips, R. B. - J 49(11) : 2345

Pikitch, E. K. - J 49(12) : 2648

Pinel-Alloul, B. - TF 1863 : 67

Pitblado, J. R. - J 49(S1) : 25
- : 33

Plahte, E. - J 49(8) : 1546

Planas, D. - J 49(10) : 2093

Pleyte, K. A. - J 49(11) : 2345

Polacheck, T. - J 49(3) : 484

Porebski, L. M. - TF 1863 : 222

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and W. O. Nelson. Geochemistry of Quebec North Shore salmon rivers during snowmelt: organic acid pulse and aluminum mobilization. 1938-1952

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893. Jones, R. A., and C. C. Mullins. 1992. Commercial Atlantic salmon catch for Western Newfoundland and Southern Labrador, Gulf Region: annual summaries 1974-1990 and weekly catches 1989-1990. 74 p. (14)

CANADIAN INDUSTRY REPORT OF FISHERIES AND AQUATIC SCIENCES/
RAPPORT CANADIEN À L'INDUSTRIE SUR LES SCIENCES HALIEUTIQUES ET AQUATIQUES

Abbreviation/Abréviation: IF

These reports contain the results of research and development that are useful to industry. The reports are directed primarily toward individuals in the primary and secondary sectors of the fishing and marine industries. No restriction is placed on subject matter and the series reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries management, technology and development, and aquatic environments relevant to Canada.

The reports are abstracted in *Aquatic sciences and fisheries abstracts* and are indexed annually in the Department's index to scientific and technical publications.

The numbers in parentheses at the end of each reference indicates the name of the establishment from which the report originated (see pages 2662 and 2663 for addresses). Copies of reports can be obtained from Micromedia Limited, 165 Hôtel du Ville, Hull (Québec) J8X 3X2.

Ces rapports contiennent les résultats des recherches et des progrès qui sont utiles à l'industrie. Ils sont préparés principalement à l'intention des membres des secteurs primaire et secondaires des industries des pêches et de la mer. Il n'y a aucune restriction quant aux sujets abordés et la collection reflète la vaste gamme des intérêts et des politiques du ministère des Pêches et des Océans, notamment dans les domaines de la gestion des pêches, de la technologie, du développement et des milieux aquatiques s'appliquant au Canada.

Les rapports sont résumés dans *Résumés des sciences aquatiques et halieutiques* (ASFA) et figurent dans l'index annuel des publications scientifiques et techniques du ministère.

Le nombre entre parenthèses après le titre de chaque rapport représente l'établissement qui a fourni le rapport (les adresses se trouvent aux pages 2662 et 2663). On peut obtenir des exemplaires des rapports en communiquant avec Micromedia limitée, 165, rue Hôtel de Ville, Hull (Québec) J8X 3X2.

211. Tabachek, J. L., and B. G. E. de March. 1991. Research priorities for the culture of Arctic charr, *Salvelinus alpinus* (L.), in Atlantic Canada. 15 p. (3)

212. Penney, R. W. (ed.). 1991. Report of the Arctic charr aquaculture workshop, March 12, 1991, St. John's, Newfoundland. 109 p. (7)

213. Chalmers, D. D. 1991. Review of the 1990-1991 British Columbia herring fishery and spawn abundance. 128 p. (1)

CANADIAN TECHNICAL REPORT OF HYDROGRAPHY AND OCEAN SCIENCES/ RAPPORT TECHNIQUE CANADIEN SUR L'HYDROGRAPHIE ET LES SCIENCES OCÉANIQUES

Abbreviation/Abréviation: TH

These reports contain scientific and technical information that is of sufficient importance to be preserved but that is not appropriate for primary scientific publication. No restriction is placed on subject matter and the series reflects hydrography and chemical and physical oceanography programs of the Department of Fisheries and Oceans.

The reports are abstracted in *Aquatic sciences and fisheries abstracts* and are indexed annually in the Department's index to scientific and technical publications.

The number in parentheses at the end of each reference indicates the name of the establishment from which the report originated (see pages 2662 and 2663 for addresses). Copies of reports can be obtained from Micromedia Limited, 165 Hôtel de Ville, Hull (Québec) J8X 3X2.

Ces rapports contiennent des données scientifiques et techniques suffisamment importantes pour être consignées mais qui ne se prêtent pas à la publication dans un journal scientifique. Il n'y a aucune restriction quant aux sujets abordés et la collection reflète les programmes d'hydrographie ainsi que d'oceanographie chimique et physique du ministère des Pêches et des Océans.

Les rapports sont résumés dans *Résumés des sciences aquatiques et halieutiques* (ASFA) et figurent dans l'index annuel des publications scientifiques et techniques du ministère.

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82. Sutherland, J. E. (ed.). 1987. Publications from the Bedford Institute of Oceanography, 1962-1986. 1147 p. (5)

103. Chen, Y. Y., R. Harland, L. E. Stover, and G. L. Williams. 1988. Fossil dinoflagellate taxa by Chinese authors, 1978-1984. 40 p. (5)

105. Keeley, J. R. 1992. SAR sensitivities to surface gravity waves. 21 p. (8)

124. Stucchi, D. J. 1990. The pulp mill pollution problem in Neroutsos Inlet, B.C. 48 p. (12)

132. R. H. Loucks Oceanology Limited, Discovery Consultants Limited, and B. Petrie. 1991. Analysing for climatological information in the long term temperature monitoring program sea temperature time series. 209 p. (5)

135. Forbes, J. R. (ed.). 1991. Pacific coast research on toxic marine algae. 76 p. (12)

136. McKeown, D. L., J. M. Preston, and W. M. Vogel. 1991. USBS acoustic receiver evaluation. 44 p. (5)

137. Waters, R. E., L. N. Brown, and M. G. Robinson. 1992. Phytoplankton of Esquimalt Lagoon, British Columbia: comparison with west Vancouver Island coastal and offshore waters. 59 p. (Available from: Royal Roads Military College, F.M.O. Victoria, B.C. VOS 1BO.)

138. Jones, E. P., F. Zemlyak, and P. Stewart. 1992. Operating manual for the Bedford Institute of Oceanography automated dissolved oxygen titration system. 51 p. (5)

139. Prinsenberg, S. J., J. S. Holladay, J. R. Rossiter, and L. A. Lalumiere. 1992. 1991 Beaufort Sea EM/Radar ice and snow sounding project. 61 p. (5)

140. Department of Fisheries and Oceans. 1992. Ocean Model Workshop Proceedings held January 15-17, 1992. 395 p. (5)

141. Prinsenberg, S. J., and I. K. Peterson. 1992. Newfoundland Shelf Sea Ice Program, 1991. 99 p. (5)

142. Ellis, K. M., R. W. P. Nelson, and J. N. Smith. 1992. Environmental monitoring report for the Point Lepreau, N.B. Nuclear Generating Station - 1989, 1990. 57 p. (5)

CANADIAN DATA REPORT OF HYDROGRAPHY AND OCEAN SCIENCES/
RAPPORT STATISTIQUE CANADIEN SUR L'HYDROGRAPHIE ET LES SCIENCES OCÉANIQUES

Abbreviation/Abréviation: DH

This series provides a medium for documentation, archiving, and dissemination of data compilations where little or no analysis is included. Such compilations will commonly have been prepared in support of other publications or of work related to hydrography and to chemical and physical oceanography programs of the Department of Fisheries and Oceans.

Data reports are not intended for general distribution and the contents must not be referred to in other publications without prior written authorization from the issuing establishment. The reports are abstracted in *Aquatic sciences and fisheries abstracts* and are indexed annually in the Department's index to scientific and technical publications.

The number in parentheses at the end of each reference indicates the name of the establishment from which the report originated (see pages 2662 and 2663 for addresses). Copies of reports can be obtained from Micromedia Limited, 165 Hôtel de Ville, Hull (Québec) J8X 3X2.

Cette collection permet de recueillir, de classer et de diffuser des ensembles de données pour lesquelles il y a peu ou pas d'analyse. Ces données auront généralement été compilées pour appuyer d'autres publications ou travaux liés aux programmes d'hydrographie ainsi que d'océanographie physique et chimique du ministère des Pêches et des Océans.

Les rapports statistiques ne sont pas préparés en vue d'une vaste distribution et leur contenu ne doit pas être mentionné dans d'autres publications sans l'autorisation écrite préalable de l'établissement qui en est l'auteur. Les rapports sont résumés dans *Résumés des sciences aquatiques et halieutiques* (ASFA) et figurent dans l'index annuel des publications scientifiques et techniques du ministère.

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5(20:1) Thomas, D. J., F. Noone, A. Blyth, and B. D. Smiley. 1990. Arctic data compilation and appraisal. Volume 20. Beaufort Sea: Chemical oceanography - hydrocarbons, metals, pigments, nutrients, oxygen and others. Revised and updated to include 1950 through 1987. 347 p. (12)

(20:2) Thomas, D. J., F. Noone, A. Blyth, and B. D. Smiley. 1990. Arctic data compilation and appraisal. Volume 20. Beaufort Sea: Chemical oceanography - hydrocarbons, metals, pigments, nutrients, oxygen and others. Revised and updated to include 1950 through 1987. 171 p. (12)

(22) Thomas, D. J., F. Noone, A. Blyth, and B. D. Smiley. 1991. Arctic data compilation and appraisal. Volume 22. Northwest Passage: Chemical oceanography - hydrocarbons, metals, pigments, nutrients, oxygen and others. 1979 through 1990. Supplement to Volume 4. Update to 1990. 86 p. (12)

32(4) ESL Environmental Sciences Limited. 1991. Arctic industrial activities compilation. Volume 4. Compilation of historical drilling chemicals data associated with offshore hydrocarbon exploration in the Canadian Beaufort Sea, Arctic Islands and Davis Strait regions (1973 to 1987). 22 p. (12)

60(8) O'Brien, M. C., K. Iseki, R. W. Macdonald, J. R. Forbes, Yang Liangfeng, and D. McCullough. 1991. NOGAP B.6; Volume 8: Sediment trap data collected in the Beaufort Sea, March 1987 - March 1988. 238 p. (12)

68. Crawford, W. R., and A. E. Gargett. 1988. Turbulence and water property observations during the OCEAN STORMS program in the Northeast Pacific, October 22 to November 10, 1987. 140 p. (12)

85. Topliss, B. J., L. Payzant, C. S. Mason, H. Edel, K. L. March, I. G. Holden, M. Thiebaux, and F. Guptill. 1990. Satellite derived daily sea surface temperature maps for Areas "A" to "D" from 1944 to 1986: Gulf of Maine and Mid Atlantic Bight to D: Gulf Stream extension/recirculation. 138 p. (5)

86. Topliss, B. J., L. Payzant, C. S. Mason, H. Edel, K. L. March, I. G. Holden, M. Thiebaux, and F. Guptill. 1990. Satellite derived daily sea surface temperature maps for Areas "E" to "G" from 1984 to 1986. E: Gulf of St. Lawrence to G: North Atlantic Current. 112 p. (5)

87. Topliss, B. J., L. Payzant, C. S. Mason, H. Edel, K. L. March, I. G. Holden, M. Thiebaux, and F. Guptill. 1990. Satellite derived daily sea surface temperature maps for Areas "H" to "J" from 1984 to 1986. H: Hudson Strait and Ungava Bay to J: Irminger Sea. 112 p. (5)

88. Topliss, B. J., L. Payzant, C. S. Mason, H. Edel, K. L. March, I. G. Holden, M. Thiebaux, and F. Guptill. 1990. Satellite derived daily sea surface temperature maps for Areas "K" to "N" from 1984 to 1986. K: Southern Baffin Bay and Davis Strait to N: Northern Hudson Bay and Foxe Basin. 138 p. (5)

89. Topliss, B. J., L. Payzant, C. S. Mason, H. Edel, K. L. March, I. G. Holden, M. Thiebaux, and F. Guptill. 1990. Satellite derived daily sea surface temperature maps for Areas "O" and "P" from 1984 to 1986. O: Overview data; East coast of Canada satellite pass and P: Western North Atlantic; Gulf of Maine to Hudson Strait. 121 p. (5)

96. Wright, D. G., J. R. N. Lazier, and M. J. Graça. 1991. Current meter and pressure data between Hamilton Bank and OWS Bravo, July 1987 - August 1988. 101 p. (5)

98. Drinkwater, K. F. 1991. Temperature and current measurements in St. Georges Bay, Nova Scotia, during 1979 and 1980. 44 p. (5)

99. Drinkwater, K. F., G. B. Taylor, and W. M. Petrie. 1991. Temperature, salinity, and density data from the Hudson Strait region during August-September, 1982. 41 p. (5)

102. Petrie, B. 1991. Current meter and tide gauge observations from Avalon Channel, 1980-1981. 89 p. (5)

103F. Tremblay, G. H., J. N. Gearing et M. Noël.

1992. Méthodes d'analyse et résultats sur les concentrations en hydrocarbures aliphatiques dans les sédiments du fleuve Saint-Laurent. 54 p. (11)

104. Macdonald, R. W., R. Pearson, D. Sieberg, F. A. McLaughlin, M. C. O'Brien, D. W. Paton, E. C. Carmack, J. R. Forbes, and J. Barwell-Clarke. 1992. NOGAP B.6, Physical and chemical data collected in the Beaufort Sea and Mackenzie River Delta, April - May 1991. 154 p. (12)

105. Tang, C. L., and Q. Y. Cui. 1992. Atlas of oceanographic and ice conditions in the N.E. Newfoundland Shelf and Northern Grand Bank, March-April 1990. 189 p. (5)

106. Crawford, W. R. 1992. Turbulence observations in the upper ocean during the Surface Wave Processes Program in the Northeast Pacific, February to March 1990. 165 p. (12)

107. Tabata, S., and W. E. Weichselbaumer. 1992. An update of the statistics of hydrographic/CTD data taken at Ocean Station P (May 1956-September 1990). 75 p. (12)

108. Tabata, S., and W. E. Weichselbaumer. 1992. An update of the statistics of oceanographic data based on hydrographic/CTD casts made at Stations 1 through 6 along Line P during January 1959 through September 1990. 317 p. (12)

109. Tabata, S., and W. E. Weichselbaumer. 1992. An update of the statistics of oceanographic data based on hydrographic/CTD casts made at Stations 7 through 12 along Line P during January 1959 through September 1990. 343 p. (12)

110. Oakey, N. S., and R. G. Pettipas. 1992. Vertical mixing rates on Georges Bank during June-July and October, 1988. 226 p. (5)

111. Petrie, L. 1992. Oceanographic and biological data relating to short-finned squid (*Illex illecebrosus*), southern Florida, January 1986. 47 p. (5)

112. MacDonald, R. W., D. Sieberg, R. Pearson, D. Paton, M. C. O'Brien, F. A. McLaughlin, and E. C. Carmack. 1992. Oceanographic data collected from the *Henry Larsen* in the Beaufort Sea, September 1991. 108 p. (12)

113F. Pettigrew, B. et P. Larouche. 1992. Données courantométriques et météorologiques dans le sud-est de la baie d'Hudson durant l'hiver 1986. 87 p. (11)

114. Burd, B. J., and R. O. Brinkhurst. 1992. Benthic infaunal surveys of British Columbia fjords, 1988 to 1990. 37 p. (12)

115. Trites, R. W., and L. Petrie. 1992. Temperature and salinity measurements at the Salmonid Demonstration and Development Farm, L'Etang Inlet, N.B. during the period 1986-1991. 24 p. (5)

CANADIAN CONTRACTOR REPORT OF HYDROGRAPHY AND OCEAN SCIENCES/
RAPPORT CANADIEN DES ENTREPRENEURS SUR L'HYDROGRAPHIE ET LES SCIENCES OCÉANIQUES

Abbreviation/Abréviation: CH

Contractor reports are unedited, final reports from scientific and technical projects contracted by the Department of Fisheries and Oceans. The contents of the reports are the responsibility of the contractor and do not necessarily reflect the official policies of the Department. If warranted, contractor reports may be rewritten for other publication series of the Department or for publication outside the government.

Contractor reports are not intended for general distribution and the contents must not be referred to in other publications without prior written authorization from the issuing establishment. The reports are abstracted in *Aquatic science and fisheries abstracts* and are indexed annually in the Department's index to scientific and technical publications.

The number in parentheses at the end of each reference indicates the name of the establishment from

which the report originated (see pages 2662 and 2663 for addresses). Copies of reports can be obtained from Micromedia Limited, 165 Hôtel de Ville, Hull (Québec) J8X 3X2.

Les rapports des entrepreneurs sont les comptes rendus définitifs et non corrigés de projets scientifiques et techniques adjugés par le ministère des Pêches et des Océans. Leur contenu engage la responsabilité de l'entrepreneur et ne reflète pas nécessairement les politiques officielles du ministère. Au besoin, les rapports des entrepreneurs peuvent être remaniés et paraître dans une autre collection de publications du ministère ou à l'extérieur du gouvernement.

Les rapports des entrepreneurs ne sont pas préparés en vue d'une vaste distribution et leur contenu ne doit pas être mentionné dans d'autres publications sans l'autorisation écrite préalable de l'établissement qui en est l'auteur. Les rapports sont résumés dans *Résumés des sciences aquatiques et halieutiques* (ASFA) et figurent dans l'index annuel des publications scientifiques et techniques du ministère.

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41. Rossiter, J. R., J. S. Holladay, and L. A. Lalumiere. 1992. Validation of airborne sea ice thickness measurement using Electromagnetic Induction during LIMEX'89 (UP-C8-028). 86 p. (5)

CANADIAN TRANSLATION OF FISHERIES AND AQUATIC SCIENCES/ TRADUCTION CANADIENNE DES SCIENCES HALIEUTIQUES ET AQUATIQUES

Abbreviation/Abréviation: TS

This series comprises articles that have been translated at the request of Department scientists for use in their research work. Copies of translations may be obtained from Translation Services, Canada Institute for Scientific and Technical Information, National Research Council, Ottawa, Ontario, Canada K1A 0S2.

Cette collection comprend les articles que les scientifiques du ministère ont demandé de faire traduire en vue de leurs recherches. On peut obtenir des exemplaires d'articles traduits au Service de traduction de l'Institut canadien de l'information scientifique et technique, Conseil national de recherches Canada, Ottawa (Ontario), Canada K1A 0S2.

5550. Yoshimoto, N. 1989. Mass spectrometry, infrared spectroscopy and nuclear magnetic resonance spectroscopy. 44 p. (Translated from Japanese: Gijutsu Shiryo - Mitsubishi Sekiyu Kabushiki Kaisha 73: 24-36.)

5551. Davies, I. J. 1991. Biomonitoring in Canadian freshwaters: the Department of Fisheries and Oceans programme, p. 75-88. *In* Problems of ecological monitoring and ecosystem modelling, Volume 13. 24 p. (Translated from original in English into Russian: Gidrometeoizdat, Leningrad (Russia).

5552. Galkina, G. G. 1972. Monorchism in thorny-headed worms of the genus *Bolbosoma porta*, 1908 (Acanthocephala: Polymorphidae). 8 p. (Translated from Russian: Tr. Biol.-Pochv. Inst. Nov. Ser. (Issledonovaniya po Faune, Sistematike i Biokhimii Gel'mintov Dal'nego Vostoka) 11(114): 116-120.)

5553. Skryabin, A. S. 1970. A new species of acanthocephalans, *Bolbosoma tuberculata* n.sp., (fam. Polymorphydae Meyer, 1931) - a parasite of whales. 7 p. (Translated from Russian: Parazitologiya 4(4): 334-337.)

5554. Kristjansson, G. J. 1991. Processing and marketing of Icelandic seafood after the year 1992 with regard to a new regulation of the European Community

on hygiene during processing and marketing of seafood and developments in these matters in other countries. 21 p. (Translated from Icelandic: Fréttabréf Rikismats Sjavarafurda 6(9): 1-6.)

5555. Bjorndal, T., and A. Toft. 1991. Industry structure of the Norwegian seafood industry. 6 p. (Table of Contents and Introduction only). (Translated from Norwegian: Fiskeriokonomisk Inst. Rapp. 3.)

5556. Salvanes, K. G., T. Bjorndal, and A. K. Hansen. 1991. Industry structure in fish farming. 4 p. (Table of Contents and Introduction only). (Translated from Norwegian: Fiskeriokonomisk Inst. Rapp. 4.)

5557. Zaika, V. E. 1981. Environmental capacity - the content of the concept and its application in ecology. 17 p. (Translated from Russian: Ekol. Moria 7: 3-9.)

5558. Okiyama, M. (ed.). [Post-1985). An atlas of the early stage fishes in Japan. 29 p. (Translated from Japanese: Tokai University Publishing Society (Japan): 1029-1040.)

5559. Yamasaki, A., and A. Kuwahara. 1991. Terminal moult of the male snow crab in the Sea of Japan. 15 p. (Translated from Japanese: Nippon Suisan Gakkaishi 57(10): 1839-1844.)

5560. Morin, A., and N. Bourassa. 1992. Empirical models of annual production and *P/B* rate for running water benthic invertebrates. 32 p. (Translated from French: J. can. sci. halieut. aquat. 49(3): 532-539.)

5561. Larinier, M., and A. Miralles. 1981. The hydraulic characteristics of baffle-equipped fishways. 54 p. (Translated from French: CEMAGREF, B. P. 26, 31321 Castanet Tolosan CEDEX (France): 53 p.)

5562. Zaika, V. E., and N. P. Makarova. 1983. The duration of marine fish embryonic development as a function of water temperature. 11 p. (Translated from Russian: Ekol. Moria 12: 51-55.)

5563. Yurakhno, M. V., and A. S. Skryabin. 1971. *Parafilaroides krascheninnikovi* sp.n., a parasite of the lungs of the ringed seal (*Pusa hispida krascheninnikovi* Naumov and Smirnov). 9 p. (Translated from Russian: Vestn. Zool. 5: 32-36.)

5564. Delyamure, S. L., and E. V. Alekseev. 1966. *Parafilaroides arcticus* n.sp. - a parasite of the Chukchee Sea ringed seal. 7 p. (Translated from Russian: Probl. Parasitol. 6: 11-15.)

5565. Pozdnyakov, S. E. 1990. Revision of the genus *Didymocystis* and validation of the genus *Didymosculcus* n.gen. (Trematoda, Didymozoidae). 15 p. (Translated from Russian: Zool. Zh. 69(12): 5-12.)

5566. Chernitsky, A. G., and A. A. Loenko. 1990. Biology of Atlantic salmon juveniles after release from hatchery to river. 174 p. (Translated from Russian: Akademiya Nauk SSSR, Ordena Lenina Kol'skii nauchnyi tsentr im. S. M. Kirova, Murmanskii morskoi biologicheskii institut, Apatity, (Russia).)

5567. Florvaag, K., and K. Ekroll. 1991. Smoked dogfish on the German market: product development as a part of increased utilization of bycatches. 130 p. (Translated from Norwegian: Thesis for Export Marketing II (Student Project AE 8189), More og Romsdal Fiskeritekniske Hogskole, Alesund, Norway.)

5568. Zhou, H., and Y. Wang. 1991. Nutritional requirements in cholesterol and phospholipids for the Chinese prawn (*Penaeus orientalis*). 14 p. (Translated from Chinese: Shuichan Xuebao 15(2): 148-154.)

5569. Liu, Y. 1991. Analysis of fatty acid composition of five freshwater fishes in China. 9 p. (Translated from Chinese: Shuichan Xuebao 15(2): 169-171.)

5570. Wang, Y., J. Liu, and W. Sun. 1991. The requirements of fatty acids, cholesterols and phospholipids for fishes and prawns. 15 p. (Translated from Chinese: Shuichan Xuebao 15(2): 177-183.)

5571. Wessells, C. R., and T. Korneliussen. 1992. The Japanese salmon market: an analysis of the consumption pattern of Japanese households. 12 p. (Translated from Norwegian: Fisk. Gang 1, Januar 1992: 34-37.)

5572. Anonymous. 1992. Norwegian fisheries 1991. 21 p. (Translated from Norwegian: Fisk. Gang 1, Januar 1992: 4-9.)

5573. Uchiyama, H., and K. Kakuda. 1984. A simple and rapid method for measuring K value, a fish freshness index. 16 p.

(Translated from Japanese: Nihon Suisan Gakkaishi 50(2): 263-267.)

5574. Babushkin, Yu. P. 1972. Influence of male age on sperm quality in the rainbow trout. 6 p. *In* Rybokhozyaistvennoye izucheniye vnutrennikh vodoyomov No. 10. (Translated from Russian: GosNIORKh, Leningrad: 20-23.)

5575. Gildberg, A. 1991. The use of enzymes in processing marine raw material. 90 p. (Translated from Norwegian: Skriftserie - fiskeriforskning (Norsk Institutt for Fiskeri og Havbruksforskning 12: 55 p.)

5576. Shen, X., and Y. Liu. 1991. On the digestibility of protein, oil and starch in *Penaeus orientalis*. 19 p. (Translated from Chinese: Shuichan Xuebao 15(3): 236-240.)

5577. Johannessen, T. 1983. The importance of hook- and bait-size for catching power and length selection in the longline fishery for cod (*Gadus morhua* L.) and haddock (*Melanogrammus aeglefinus* L.). 166 p. (Translated from Norwegian: Thesis. Institutt for Fiskeribiologi, Universitetet i Bergen, Bergen, Norway, 109 p.)

5578. Rumyantsev, Ye. A. 1991. Evolution of the parasitic fauna of fish in the lakes of the Karelian-Kola limnological region (in connection with the typology of lake ecosystems. 13 p. (Translated from Russian: Parazitologiya 25(6): 527-535.)

5579. Anonymous. 1988. Cod as aquaculture fish: biological basis, establishment and operations, economics and marketing. 7 p. (Translated from Norwegian: Rapp. "Myreprosjektet". [Pilot project financed by the Norwegian Fisheries Research Council, District Committee for North Norway. ISBN 82-7251-198-3] Tromso, 1988: Table of Contents only.)

5580. Heincke, F. 1984. The varieties of herring. Part 2. 209 p. (Translated from German: Jahresb. Komm. Unt. d. deutsch. Meere in Kiel: 84 p.)

ECONOMIC AND COMMERCIAL ANALYSIS REPORT/
RAPPORT DE L'ANALYSE ÉCONOMIQUE ET COMMERCIALE

Abbreviation/Abréviation: EC

These reports contain analyses of trends, studies of government policies, marketing programs, support programs, trade, tariffs, etc. that are of sufficient importance to be preserved but that are not considered appropriate for primary publication. No restriction is placed on subject matter and the series records the results of work relating to the economic and commercial aspects of the Department of Fisheries and Oceans mandate.

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Ces rapports contiennent des études des politiques gouvernementales, des programmes de mise en marché, des programmes de soutien, du commerce, des tarifs, et des analyses de tendances, qui sont suffisamment importantes pour être consignées mais qui ne se prêtent pas à la publication dans une revue. Les sujets traités sont libres et la collection présente les résultats d'études économiques et commerciales reliées au mandat du ministère des Pêches et des Océans.

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33. Department of Fisheries and Oceans. 1989. Atlantic Canada's salmon farming industry and changes in the world market environment. 26 p. (8)

33F. Ministère des Pêches et des Océans. 1989. L'industrie canadienne de l'élevage du saumon dans la région de l'Atlantique et les changements au niveau du marché mondial. 26 p. (8)

34. Department of Fisheries and Oceans. 1989. 1988 report on fishing vessel performance Scotia-Fundy Region. 66 p. (6)

79. MacDonald, J. K., and J. F. Collins. 1990. Canada's northern shrimp industry: an economic assessment of the fishery. 94 p. (7)

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4738. Babin, M., J.-C. Therriault, and L. Legendre. 1991. Potential utilization of temperature in estimating primary production from remote sensing data in coastal and estuarine waters. Estuar. Coast. Shelf Sci. 33: 559-579.

4739. Brodie, W. B., and W. R. Bowering. 1991. A review of the assessments of the American plaice (*Hippoglossoides platessoides*) stock in Divisions 3LNO in relation to the recent decline in stock abundance. NAFO Sci. Counc. Stud. 16: 103-110.

4740. Brodie, W. B., S. J. Walsh, and W. R. Bowering. 1991. Managing transboundary flatfish stocks: sources and consequences of uncertainty. NAFO Sci. Counc. Stud. 16: 137-142.

4741F. Boulva, J. 1991. Les sciences de la mer au Québec: historique et perspectives d'avenir. Gaspésie 29(3-4): 60-68.

4742. Chevrier, A., P. Brunel, and D. J. Wildish. 1991. Structure of a suprabenthic shelf sub-community of gammaridean Amphipoda in the Bay of Fundy compared with similar sub-communities in the Gulf of St. Lawrence. Hydrobiologia 223: 81-104.

4743. Demers, S., S. Roy, R. Gagnon, and C. Vignault. 1991. Rapid light-induced changes in cell fluorescence and in xanthophyll-cycle pigments of *Alexandrium excavatum* (Dinophyceae) and *Thalassiosira pseudonana* (Bacillariophyceae): a photo-protection mechamism. Mar. Ecol. (Prog. Ser.) 76: 185-193.

4744. Devlin, R. H., and E. M. Donaldson. 1991. DNA testing for determination of genetic sex. The Fish Farm News, October/November, 1991: 24-25.

4745. Dodson, J. J., J. E. Carscadden, L. Bernatchez, and F. Colombani. 1991. Relationship between spawning mode and phylogeographic structure in mitochondrial DNA of North Atlantic capelin *Mallotus villosus*. Mar. Ecol. (Prog. Ser.) 76: 103-113.

4746. Evans, G. T. 1991. Commentary: will JGOFS estimate global ocean fluxes? US JGOFS Newsl. (Woods Hole, MA) 2(4): 6.

4747. Lawrence, S. G., and M. H. Holoka. 1991. Response of crustacean zooplankton impounded in situ to cadmium at low environmental concentrations. Verh. Internat. Verein. Limnol. 24: 2254-2259.

4748. Lilly, G. R. 1991. Interannual variability in predation by cod (*Gadus morhua*) on capelin (*Mallotus villosus*) and other prey off southern Labrador and northeastern Newfoundland. ICES Mar. Sci. Symp. 193: 133-146.

4749. Malley, D. F., and P. S. S. Chang. 1991. Early observations on the zooplankton community of a Precambrian Shield lake receiving experimental additions of cadmium. Verh. Internat. Verein. Limnol. 24: 2248-2253.

4750. Marsot, P., A. D. Cembella, and J. C. Colombo. 1991. Intracellular and extracellular amino acid pools of the marine diatom *Phaeodactylum tricornutum* (Bacillariophyceae) grown on unenriched seawater in high-cell-density dialysis culture. J. Phycol. 27: 478-491.

4751. Narayanan, S., E. B. Colbourne, and C. Fitzpatrick. 1991. Frontal oscillations on the NE Newfoundland Shelf. Atmos.-Ocean 29(3): 547-562.

4752. Niimi, A. J. 1991. Solubility of organic chemicals in octanol, triolein and cod

liver oil and relationships between solubility and partition coefficients. Water Res. 25(12): 1515-1521.

4753. Robichaud, D. A., R. W. Elner, and R. F. J. Bailey. 1991. Differential selection of crab *Chionoecetes opilio* and *Hyas* spp. as prey by sympatric cod *Gadus morhua* and thorny skate *Raja radiata*. Fish Bull., U.S. 89: 669-680.

4754. Waiwood, B. A., K. Haya, and L. Van Eeckhaute. 1992. Energy metabolism of hatchery-reared juvenile salmon (*Salmo salar*) exposed to low pH. Comp. Biochem. Physiol. 101C(1): 49-56.

4755. Wesson, L. J., R. V. Hunt, H. C. Freeman, and J. F. Klaverkamp. 1991. Responses of Atlantic salmon (*Salmo salar*) to acidic rivers in Nova Scotia and to various diets: metals and metallothionein in liver and kidney. Comp. Biochem. Physiol. 100C(3): 657-663.

4756. Wildish, D. J., and B. Frost. 1991. Volumetric growth in gammaridean Amphipoda. Hydrobiologia 223: 171-176.

4757. Beacham, T. D., and N. V. Varnavskaya. 1991. Effect of parental heterozygosity on pink salmon (*Oncorhynchus gorbuscha*) embryonic and alevin survival and development at extreme temperatures. Can. J. Zool. 69(9): 2485-2489.

4758. Beacham, T. D., and R. E. Withler. 1991. Genetic variation in mortality of chinook salmon, *Oncorhynchus tshawytscha* (Walbaum), challenged with high water temperatures. Aquacult. Fish. Manage. 22: 125-133.

4759. Blackbourn, D. J. 1991. Brood-year sea surface temperature and the subsequent freshwater survival rate of wild and enhanced stocks of North American pink, chum and sockeye salmon, p. 122-138. *In* B. White, and I. Guthrie (eds.) Proc. 15th Northeast Pacific Pink and Chum Salmon Workshop, February 27 - March 1, 1991, Tigh-Na-Mara Resort, Parksville, B.C. DFO, Vancouver, B.C.

4760. Blackburn, J., and W. C. Clarke. 1990. Lack of density effect on growth and smolt quality in zero-age coho salmon. Aquacult. Eng. 9: 121-130

4761. Bowering, W. R., and W. B. Brodie. 1991. Distribution of commercial flatfishes in the Newfoundland-Labrador region of the Canadian Northwest Atlantic and changes in certain biological parameters since exploitation. Neth. J. Sea Res. 27(3/4): 407-422.

4762. Cobb, D. G., and J. F. Flannagan. 1991. Responses of Plecoptera to stream channelization in the drainage basin of Dauphin Lake, Canada, p. 547-557. *In* J. Alba-Tercedor, and A. Sanchez-Ortega (eds.) Overview and strategies of Ephemeroptera and Plecoptera, Proc. 6th International Ephemeroptera Conf. and 10th International Symp. on Plecoptera, July, 1989, Granada, Spain. Sandhill Crane Press, Gainsville, Florida (USA).

4763. Cobb, D. G., T. D. Galloway, and J. F. Flannagan. 1991. Life history adaptations of mayflies to an unstable reach of Wilson Creek, Manitoba, Canada, p. 465-481. *In* J. Alba-Tercedor, and A. Sanchez-Ortega (eds.) Overview and strategies of Ephemeroptera and Plecoptera, Proc. 6th International Ephemeroptera Conf. and 10th International Symp. on Plecoptera, July, 1989, Granada, Spain. Sandhill Crane Press, Gainsville, Florida (USA).

4764. Cosens, S. E., and L. P. Dueck. 1991. Group size and activity patterns of belugas (*Delphinapterus leucas*) and narwhals (*Monodon monoceros*) during spring migration in Lancaster Sound. Can. J. Zool. 69(6): 1630-1635.

4765. Fahrig, L., and B. Atkinson. 1991. Uncertainty in a fixed stock fishery: a redfish simulation study. NAFO Sci. Counc. Stud. 16: 25-37.

4766. Grainger, E. H. 1991. Exploitation of arctic sea ice by epibenthic copepods. Mar. Ecol. (Prog. Ser.) 77: 119-124.

4767. Jensen, J., and E. Groot. 1990. Sablefish and halibut research at P.B.S. The Fish Farm News, September 1: 4.

4768. Johannsson, O. E., and R. O'Gorman. 1991. Roles of predation, food, and temperature in structuring the epilimnetic zooplankton populations in Lake Ontario, 1981-1986. Trans. Am. Fish Soc. 120: 193-208.

4769. Johnsson, J. I., and C. Clarke. 1992. A genetic study of seasonal growth patterns in fresh and sea water of juvenile steelhead trout and

domesticated rainbow trout crosses. Aquaculture 100(1-3): 100 (abstract only).

4770. Lee, E. G-H., and T. P. T. Evelyn. 1991. Broodstock erythromycin injection prevents renibacterium vertical transmission. FHS Newsl. 19(4): 1.

4771. Lowen, R. G., and J. F. Flannagan. 1992. Nymphs and imagoes of four North American species of *Procloeon* Bengtsson with description of a new species (Ephemeroptera, Baetidae). Can. Entomol. 124: 97-108.

4772. McLean, E., M. D. Sadar, R. H. Devlin, L. M. Souza, and E. M. Donaldson. 1991. Promotion of growth in diploid and triploid coho salmon with parenteral delivery of a recombinant porcine somatotropin. Aquat. Living Resour. 4: 155-160.

4773. Muir, D. C. G., C. A. Ford, N. P. Grift, R. E. A. Stewart, and T. F. Bidleman. 1992. Organochlorine contaminants in narwhal (*Monodon monoceros*) from the Canadian Arctic. Environ. Pollut. 75: 307-316.

4774. Nagata, W. D., and J. N. C. Whyte. 1992. Effects of yeast and algal diets on the growth and biochemical composition of the rotifer *Brachionus plicatilis* (Müller) in culture. Aquacult. Fish. Manage. 23: 13-21.

4775. Nikl, L., L. J. Albright, and T. P. T. Evelyn. 1991. Influence of seven immunostimulants on the immune response of coho salmon to *Aeromonas salmonicida*. Dis. Aquat. Org. 12: 7-12.

4776. Scherer, E., R. E. McNicol, and M. J. Capel. 1992. A computerized system for analyzing linear locomotion. Behav. Res. Methods Instrum. Comput. 24(1): 37-43.

4777. Scrivener, J. C. 1991. An update and application of the production model for Carnation Creek chum salmon, p. 210-219. *In* B. White, and I. Guthrie (eds.) Proc. 15th Northeast Pacific Pink and Chum Salmon Workshop, February 27 - March 1, 1991, Tigh-Na-Mara Resort, Parksville, B.C. DFO, Vancouver, B.C.

4778. Taylor, W. D., and O. E. Johannsson. 1991. A comparison of estimates of productivity and consumption by zooplankton for planktonic ciliates in Lake Ontario. J. Plankton Res. 13(2): 363-372.

4779. Zitko, V. 1992. Assessment of the significance of chemicals in sediments. J. Environ. Sci. Health A27(1): 273-281.

4780. Zitko, V. 1992. Patterns of 2,3,7,8-substituted chlorinated dibenzodioxins and dibenzofurans in aquatic fauna. Sci. Total Environ. 111: 95-108.

4781. Papst, M. H., T. A. Dick, A. N. Arnason, and C. E. Engel. 1992. Effect of rearing density on the early growth and variation in growth of juvenile Arctic charr, *Salvelinus alpinus* (L.). Aquacult. Fish. Manage. 23: 41-47.

4782. Wildish, D. J., and A. M. Saulnier. 1992. The effect of velocity and flow direction on the growth of juvenile and adult giant scallops. J. Exp. Mar. Biol. Ecol. 133: 133-143.

4783. Armstrong, R. D., T. P. T. Evelyn, S. W. Martin, W. Dorward, and H. W. Ferguson. 1989. Erythromycin levels within eggs and alevins derived from spawning broodstock chinook salmon *Oncorhynchus tshawytscha* injected with the drug. Dis. Aquat. Org. 6: 33-36.

4784. Brodeur, R. D., and D. M. Ware. 1992. Long-term variability in zooplankton biomass in the subarctic Pacific Ocean. Fish. Oceanogr. 1(1): 32-38.

4785. Hecky, R. E., D. J. Ramsey, R. A. Bodaly, and N. E. Strange. 1991. Increased methylmercury contamination in fish in newly formed freshwater reservoirs, p. 33-52. *In* T. Suzuki et al. (eds.) Advances in mercury toxicology. Plenum Press, New York, USA.

4786. Kabata, Z. 1992. Copepoda parasitic on Australian fishes, XV. Family Ergasilidae (Poecilostomatoida). J. Nat. Hist. 26: 47-66.

4787. Leslie, J. K., and C. A. Timmins. 1991. Distribution and abundance of young fish in Chenal Ecarte and Chematogen Channel in the St. Clair River delta, Ontario. Hydrobiologia 219: 135-142.

4788. Leslie, J. K., and C. A. Timmins. 1991. Distribution and abundance of young fish in the St. Clair River and associated waters, Ontario. Hydrobiologia 219: 125-134.

4789. Vallentyne, J. R. 1990. Limnology, education and the biospheric revolution. Mem. Ist. Ital. Idrobiol. 47: 365-372

4790. Ware, D. M. 1991. Climate, predators

and prey: behaviour of a linked oscillating system, p. 279-291. *In* T. Kawasaki et al. (eds.) Long-term variability of pelagic fish populations and their environment. Pergamon Press, Tokyo, Japan.

4791. Withler, R. E. 1990. Genetic consequences of salmonid egg fertilization techniques, p. 326 (abstract only). *In* T. Gjedrem (ed.) Genetics in aquaculture III. Proc. Third Intern. Symp. on Genetics in Aquaculture, 20-24 June 1988, Trondheim, Norway. Elsevier, Amsterdam, Netherlands.

4792. Atkinson, E. G., and J. A. Percy. 1992. Diet comparison among demersal marine fish from the Canadian Arctic. Polar Biol. 11: 567-573.

4793. Benfey, T. J., E. M. Donaldson, and L. A. Johnson. 1991. Inability of flow cytometry to distinguish X- from Y-chromosome-bearing spermatozoa of chinook salmon. Prog. Fish-Cult. 53: 36-40.

4794. Lapi, L., M. Hamer, and B. Johnson. 1990. Data organization and coding for a coastwide mark-recovery data system. Am. Fish. Soc. Symp. 7: 720-724.

4795. Starr, M., J. H. Himmelman, and J.-C. Therriault. 1992. Isolation and properties of a substance from the diatom *Phaeodactylum tricornutum* which induces spawning in the sea urchin *Strongylocentrotus droebachiensis*. Mar. Ecol. Prog. Ser. 79: 275-287.

4796. Wildish, D. J., D. D. Kristmanson, and A. M. Saulnier. 1992. Interactive effect of velocity and seston concentration on giant scallop feeding inhibition. J. Exp. Mar. Biol. Ecol. 155: 161-168.

4797. Yamada, S. B., and T. J. Mulligan. 1990. Screening of elements for the chemical marking of hatchery salmon. Am. Fish. Soc. Symp. 7: 550-561.

4798. Muir, D. C. G., A. L. Yarechewski, and B. R. Neal. 1992. Influence of surface films on the fate of deltamethrin following aerial application to prairie ponds. Environ. Toxicol. Chem. 11(5): 581-591.

4799. Pollock, K. H., J. M. Hoenig, and C. M. Jones. 1991. Estimation of fishing and natural mortality when a tagging study is combined with a creel survey or port sampling. Am. Fish. Soc. Symp. 12: 423-434.

4800. Shelton, P. A., L. Fahrig, and R. B. Millar. 1991. Uncertainty associated with cod-capelin interactions: how much is too much? NAFO Sci. Counc. Stud. 16: 13-19.

4801. Suuronen, P., R. B. Millar, and A. Järvik. 1991. Selectivity of diamond and hexagonal mesh codends in pelagic herring trawls: evidence of a catch size effect. Finn. Fish. Res. 12: 143-156.

4802. Taylor, D. M., and J. M. Hoenig. 1991. Effect of tag anchor location on retention/survival through molt in male snow crabs *Chionoecetes opilio*. Fish. Bull. U.S. 89: 325-329.

4803. Walsh, S. J. 1991. Diel variation in availability and vulnerability of fish to a survey trawl. J. Appl. Ichthyol. 7: 147-159.

4804. Demers, S., J. Kim, P. Legendre, and L. Legendre. 1992. Analyzing multivariate flow cytometric data in aquatic sciences. Cytometry 13: 291-298.

4805. Giles, M. A. 1991. Strain differences in hemoglobin polymorphism, oxygen consumption, and blood oxygen equilibria in three hatchery broodstocks of Arctic charr, *Salvelinus alpinus*. Fish Physiol. Biochem. 9(4): 291-301.

4806. Percy, J. A. 1992. Les écosystèmes marins et la production biologique dans les eaux adjacentes au Nord québécois, p. 11-20. *Dans* Les contaminants dans l'environnement marin du Nunavik, Actes du Colloque, 12 au 14 septembre 1990, Montréal/ Contaminants in the marine environment of Nunavik, p. 11-20. *In* Proceedings of the conference, September 12-14, 1990, Montreal. Collection Nordicana 56. Publ. par le Centre d'études nordiques de l'Université Laval, Québec, P.Q., Canada.

4807. Peterson, R. H., and L. Van Eeckhaute. 1992. Distributions of Ephemeroptera, Plecoptera, and Trichoptera of three maritime catchments differing in pH. Freshwater Biol. 27: 65-78.

4808. Aiken, D. E., and S. L. Waddy. 1992. The growth process in crayfish. Rev. Aquat. Sci. 6(3,4): 335-381.

4809. Evans, G. T., and M. A. Paranjape. 1992. Precision of estimates of phytoplankton growth and microzooplankton grazing when the functional response of grazers may be

nonlinear. Mar. Ecol. Prog. Ser. 80: 285-290.

4810. Giberson, D. J., and D. M. Rosenberg. 1992. Effects of temperature, food quantity, and nymphal rearing density on life-history traits of a northern population of *Hexagenia* (Ephemeroptera: Ephemeridae). J. North Am. Benthol. Soc. 11(2): 181-193.

4811. Giberson, D. J., and D. M. Rosenberg. 1992. Egg development in *Hexagenia limbata* (Ephemeroptera: Ephemeridae) from Southern Indian Lake, Manitoba: temperature effects and diapause. J. North Am. Benthol. Soc. 11(2): 194-203.

4812. Hoenig, J. M., and C. M. Heywood. 1991. Use of model predictions as an auxiliary variable to reduce variance in a creel survey. Am. Fish. Soc. Symp. 12: 292-297.

4813. Irvine, J. R., and R. E. Bailey. 1992. Some effects of stocking coho salmon fry and supplemental instream feeding on wild and hatchery-origin salmon. North Am. J. Fish. Manage. 12: 125-130.

4814. Komourdjian, M. P., and R. L. Saunders. 1991. Cells with affinity for periodic acid - Schiff are present in the pars intermedia of Atlantic salmon. Can. J. Zool. 69: 3105-3108.

4815. Laprise, R., and S. J. M. Blaber. 1992. Predation by Moses perch, *Lutjanus russelli*, and blue-spotted trevally, *Caranx bucculentus*, on juvenile brown tiger prawn, *Penaeus esculentus*: effects of habitat structure and time of day. J. Fish Biol. 40: 627-635.

4816. Millar, R. B., and S. J. Walsh. 1992. Analysis of trawl selectivity studies with an application to trouser trawls. Fish. Res. 13: 205-220.

4817. Morgan, M. J., and J. W. Kiceniuk. 1992. Response of rainbow trout to a two month exposure to Vision®, a glyphosate herbicide. Bull. Environ. Contam. Toxicol. 48: 772-780.

4818. O'Connell, M. F., J. B. Dempson, and D. G. Reddin. 1992. Evaluation of the impacts of major management changes in the Atlantic salmon (*Salmo salar* L.) fisheries of Newfoundland and Labrador, Canada, 1984-1988. ICES J. Mar. Sci. 49: 69-87.

4819. Parsons, G. J., S. M. C. Robinson, R. A. Chandler, L. A. Davidson, M. Lanteigne, and M. J. Dadswell. 1992. Intra-annual and long-term patterns in the reproductive cycle of giant scallops *Placopecten magellanicus* (Bivalvia: Pectinidae) from Passamaquoddy Bay, New Brunswick, Canada. Mar. Ecol. Prog. Ser. 80: 203-214.

4820. Pepin, P., T. H. Shears, and Y. de Lafontaine. 1992. Significance of body size to the interaction between a larval fish (*Mallotus villosus*) and a vertebrate predator (*Gasterosteus aculeatus*). Mar. Ecol. Prog. Ser. 81: 1-12.

4821. Percy, J. A. 1992. Under-ice community of Arctic seas. Sherkin Comment 1992(11): 5.

4822. Prager, M. H., and J. M. Hoenig. 1992. Can we determine the significance of key-event effects on a recruitment time series? - A power study of superposed epoch analysis. Trans. Am. Fish. Soc. 121: 123-131.

4823. Reddin, D. G., M. F. O'Connell, and D. A. Dunkley. 1992. Assessment of an automated fish counter in a Canadian river. Aquacult. Fish. Manage. 23: 113-121.

4824. Runge, J. A., J.-C. Therriault, L. Legendre, R. G. Ingram, and S. Demers. 1991. Coupling between ice microalgal productivity and the pelagic, metazoan food web in southeastern Hudson Bay: a synthesis of results. Polar Res. 10(2): 325-338.

4825. Walsh, S. J., R. B. Millar, C. G. Cooper, and W. M. Hickey. 1992. Codend selection in American plaice: diamond versus square mesh. Fish. Res. 13: 235-254.

4826. Borgmann, U., and D. M. Whittle. 1992. DDE, PCB, and mercury concentration trends in Lake Ontario rainbow smelt (*Osmerus mordax*) and slimy sculpin (*Cottus cognatus*): 1977 to 1988. J. Great Lakes Res. 18(2): 298-308.

4827. Bowering, W. R., and G. R. Lilly. 1992. Greenland halibut (*Reinhardtius hippoglossoides*) off southern Labrador and northeastern Newfoundland (Northwest Atlantic) feed primarily on capelin (*Mallotus villosus*). Neth. J. Sea Res. 29(1-3): 211-222.

4828. Gilbert, M., L. Fortier, D. Ponton, and R. Drolet. 1992. Feeding ecology of marine fish larvae across the Great Whale River plume in seasonally ice-covered southeastern Hudson Bay. Mar. Ecol. Prog. Ser. 84: 19-30.

4829. Lacroix, G. L. 1992. Mitigation of low stream pH and its effects on salmonids. Environ. Pollut. 78: 157-164.

4830. Morgan, M. J. 1992. Low-temperature tolerance of American plaice in relation to declines in abundance. Trans. Am. Fish. Soc. 121: 399-402.

4831. Shaw, D. H., M. J. Hart, and O. Luderitz. 1992. Structure of the core oligosaccharide in the lipopolysaccharide isolated from *Aeromonas salmonicida* ssp. *salmonicida*. Carbohydr. Res. 231: 83-91.

4832. Walsh, S. J. 1992. Factors influencing distribution of juvenile yellowtail flounder (*Limanda ferruginea*) on the Grand Bank of Newfoundland. Neth. J. Sea Res. 29(1-3): 193-203.

4833. Batts, W. N., G. S. Traxler, and J. R. Winton. 1991. Factors affecting the efficiency of plating for selected fish rhabdoviruses, p. 1-8. *In* Proc. Second Intern. Symp. on Viruses of Lower Vertebrates, July 29-31, 1991. Organized by J. L. Fryer, Dept. of Microbiology, Oregon State University, Corvallis, Oregon.

4834. Beacham, T. D. 1992. Early survival and growth of pink salmon (*Oncorhynchus gorbuscha*) in fresh and saline waters. Aquaculture 106: 151-159.

4835. Beacham, T. D., and T. P. T. Evelyn. 1992. Population and genetic variation in resistance of chinook salmon to vibriosis, furunculosis, and bacterial kidney disease. J. Aquat. Anim. Health 4: 153-167.

4836. Beacham, T. D., and T. P. T. Evelyn. 1992. Population variation in resistance of pink salmon to vibriosis and furunculosis. J. Aquat. Anim. Health 4: 168-173.

4837. Black, E. A., J. N. C. Whyte, J. W. Bagshaw, and N. G. Ginther. 1991. The effects of *Heterosigma akashiwo* on juvenile *Oncorhynchus tshawytscha* and its implications for fish culture. J. Appl. Ichthyol. 7: 168-175.

4838. Bower, S. M. 1992. Diseases and parasites of mussels, p. 543-563. *In* E. Gosling (ed.) The mussel *Mytilus*: ecology, physiology, genetics and culture (Developments in Aquaculture and Fisheries Science, Vol. 25). Elsevier, Amsterdam, Netherlands.

4839. Bower, S. M. 1992. (Review of) J. S. Stolen, T. C. Fletcher, D. P. Anderson, B. S. Roberson, and W. B. van Muiswinkel (eds.) Techniques in fish immunology, fish immunology technical communications. J. Wildlife Dis. 28(2): 333.

4840. Bower, S. M. 1992. Two mysterious diseases of cultured Japanese scallops (*Patinopecten yessoensis*) in British Columbia/Deux mystérieuses maladies affectant les pétoncles japanais (*Patinopecten yessoensis*) de culture en Colombie-Britannique. Bull. Can. Soc. Zool./Bull. soc. can. zool. 23(2): 31-32 (abstract only/ résumé seulement).

4841. Bower, S. M. 1992. Warning - associated disease risks with uncontrolled movements of shellfish. The Fish Farm News 5(7): 13, 20-21.

4842. Bower, S. M. 1992. Winter mortalities and histopathology of freezing in Manila clams (*Tapes philippinarum*) in British Columbia, Canada, p. 76. *In* Abstracts, Fifth Intern. Colloquium on Pathology in Marine Aquaculture, 2-4 April, 1992, Montpellier, France.

4843. Bower, S. M., and G. R. Meyer. 1991. Disease of Japanese scallops (*Patinopecten yessoensis*) caused by an intracellular bacterium. J. Shellfish Res. 10(2): 513. (abstract only).

4844. Bower, S. M., and L. Margolis. 1991. Potential use of helminth parasites in stock identification of flying squid, *Ommastrephes bartrami*, in North Pacific waters. Can. J. Zool. 69: 1124-1126.

4845. Bower, S. M., J. Blackbourn, and G. R. Meyer. 1992. Parasite and symbiont fauna of Japanese littlenecks, *Tapes philippinarum* (Adams and Reeve, 1850), in British Columbia. J. Shellfish Res. 11(1): 13-19.

4846. Brocklebank, J. R., D. J. Speare, R. D. Armstrong, and T. Evelyn. 1992. Septicemia in farmed Atlantic and chinook salmon due to a rickettsia-like agent. FHS Newsl. 20(1): 1.

4847. Brocklebank, J. R., D. J. Speare, R. D. Armstrong, and T. Evelyn. 1992. Septicemia suspected to be caused by a rickettsia-like agent in farmed Atlantic salmon. Can. Vet. J. 33: 407-408.

4848. Clarke, C. 1990. Light control lengthens

growout season. The Fish Farm News 3(6): 26.

4849. Corley-Smith, G. E., K. Tsumura, M. Siemens, T. Godin, and E. M. Donaldson. 1991. Preservation of wild stocks by triploid sterilization of introduced brook trout, abstract only. *In* Genetic conservation of salmonid fishes, June 24 through July 5, 1991, Moscow, Idaho and Pullman, Washington, U.S.A. Sponsored by NATO.

4850. Devlin, R., and E. Donaldson. 1990. Escapism of modified organisms: implementation of modified organisms. New Biotech 4(8): 20.

4851. Diez, J. M., G. Giannico, E. McLean, and E. M. Donaldson. 1992. The effect of somatostatins (SRIF-14, 25 and 28), galanin and anti-SRIF on plasma growth hormone levels in coho salmon (*Oncorhynchus kisutch*, Walbaum). J. Fish Biol. 40: 887-893.

4852. Donaldson, E. M. 1990. Introduction [to the Symposium on Marine Resources of the North Pacific Ocean]. Trans. Roy. Soc. Can. Six. Ser., Vol. 1: 293-294.

4853. Donaldson, E. M. 1991. Containment of genetically altered fish, abstract only. *In* Genetic conservation of salmonid fishes, June 24 through July 5, 1991, Moscow, Idaho and Pullman, Washington, U.S.A. Sponsored by NATO.

4854. Donaldson, E. M., and F. Piferrer. 1991. Estrogen direct feminization of chinook salmon, abstract. *In* 4th Intern. Symp. on Reproductive Physiology of Fish, 7-12 July, 1991, University of East Anglia, Norwich, U.K.

4855. Fargo, J., and A. V. Tyler. 1992. Statistical testing of research trawl data with implications for survey design. Neth. J. Sea Res. 29(1-3): 97-108.

4856. Fyhn, U. E. H., and R. E. Withler. 1991. Ontogeny of hemoglobins in chinook salmon, *Oncorhynchus tshawytscha*. Comp. Biochem. Physiol. 98B(2/3): 201-208.

4857. Fyhn, U. E. H., W. C. Clarke, and R. E. Withler. 1991. Hemoglobins in smoltifying chinook salmon, *Oncorhynchus tshawytscha*, subjected to photoperiod control. Aquaculture 95: 359-372.

4858. Garnick, E. 1992. Parasite virulence and parasite-host coevolution: a reappraisal. J. Parasitol. 78(2): 381-386.

4859. Johnson, S. C., and L. J. Albright. 1991. *Lepeophtheirus cuneifer* Kabata, 1974 (Copepoda: Caligidae) from seawater-reared rainbow trout, *Oncorhynchus mykiss*, and Atlantic salmon, *Salmo salar*, in the Strait of Georgia, British Columbia, Canada. Can. J. Zool. 69: 1414-1416.

4860. Kent, M. L., D. J. Whitaker, and L. Margolis. 1991. Experimental transmission of the myxosporean *Myxobolus articus* to sockeye salmon using an aquatic oligochaeta, *Eclipidrilus* sp. (Lumbriculidae). FHS Newsl. 18(4): 5.

4861. Kent, M. L., S. Dawe, and J. Ellis. 1992. Transmission of a systemic diplomonad flagellate of chinook salmon reared in sea water. FHS Newsl. 20(1): 5.

4862. Legendre, L., M.-J. Martineau, J.-C. Therriault, and S. Demers. 1992. Chlorophyll α biomass and growth of sea-ice microalgae along a salinity gradient (southeastern Hudson Bay, Canadian Arctic). Polar Biol. 12: 445-453.

4863. Leslie, J. K., and C. A. Timmins. 1992. Enhancement of ecological studies of freshwater larval fish: shore sampling. J. Appl. Ichthyol. 8: 214-221.

4864. McLean, E., E. Teskeredzic, E. M. Donaldson, Z. Teskeredzic, Y. Cha, R. Sittner, and C. G. Pitt. 1992. Accelerated growth of coho salmon *Oncorhynchus kisutch* following sustained release of recombinant porcine somatotropin. Aquaculture 103: 377-387.

4865. Mundie, J. H. 1991. Overview of effects of Pacific coast river regulation on salmonids and the opportunities for mitigation. Am. Fish. Soc. Symp. 10: 1-11.

4866. Murray, C. B., T. P. T. Evelyn, T. D. Beacham, L. W. Barner, J. E. Ketcheson, and L. Prosperi-Porta. 1992. Experimental induction of bacterial kidney disease in chinook salmon by immersion and cohabitation challenges. Dis. Aquat. Org. 12: 91-96.

4867. Niimi, A. J., and H. B. Lee. 1992. Free and conjugated concentrations of nine resin acids in rainbow trout (*Oncorhynchus mykiss*) following

waterborne exposure. Environ. Toxicol. Chem. 11: 1403-1407.

4868. Noakes, D. J., and A. Campbell. 1992. Use of geoduck clams to indicate changes in the marine environment of Ladysmith Harbour, British Columbia. Environmetrics 3(1): 81-97.

4869. Olson, P. L. 1992. The trilingual species list for the Waves/Vagues database, p. 119-135. *In* E. Fuseler, and S. Wiist (eds.) The aquatic environment: description, management, conservation. Proc. 17th Annual Conf. Int. Assoc. Aquat. Mar. Sci. Libr. Inf. Cent. Conf. Ser., October 7-11, 1991, Galveston, Texas.

4870. Peterson, R. H., and A. Screedharan. 1992. Water content of Atlantic salmon fry at first feeding in southern New Brunswick hatcheries. Prog. Fish-Cult. 54: 181-183.

4871. Shelbourn, J. E., W. C. Clarke, J. R. McBride, U. H. M. Fagerlund, and E. M. Donaldson. 1992. The use of 17α-methyltestosterone and 3,5,3'-triiodo-L-thyronine for sterilizing and accelerating the growth of zero-age coho salmon smolts (*Oncorhynchus kisutch*). Aquaculture 103: 85-99.

4872. Sukumasavin, N., E. M. Donaldson, and W. Leelapatra. 1991. Endocrine and ovulatory responses to the administration of domperidone and gonadotropin releasing hormones in the Thai carp (*Puntius gonionotus*), abstract only. *In* Intern. Symp. on Neurotransmitters, Neuropeptides and Endocrine Functions (Satellite Symp. of the Second Congress of the AOSCE), December 9-11, 1991, Uktal University, Vani Vihar, Bhubaneswar-751 004, India.

4873. Sukumasavin, N., W. Leelapatra, E. McLean, and E. M. Donaldson. 1992. Orally induced spawning of Thai carp (*Puntius gonionotus*, Bleeker) following co-administration of des Gly^{10}(D-Arg^{6}) sGnRH ethylamide and domperidone. J. Fish Biol. 40: 477-479.

4874. Teskeredzic, E., Z. Teskeredzic, E. M. Donaldson, E. McLean, and I. Solar. 1991. Triploidization of coho salmon following application of heat and electric shocks: comparison between alternating and direct currents, abstract only. *In* Genetic conservation of salmonid fishes, June 24 through July 5, 1991, Moscow, Idaho and Pullman, Washington, U.S.A. Sponsored by NATO.

4875. Traxler, G. S., J. R. Roome, and M. L. Kent. 1991. Susceptibility of Atlantic (*Salmo salar*), sockeye (*Oncorhynchus nerka*), and chinook salmon (*O. tshawytscha*) to infectious hematopoietic necrosis virus in sea water, p.15 (abstract). *In* Proc. Second Intern. Symp. on Viruses of Lower Vertebrates, July 29-31, 1991. Organized by J. L. Fryer, Dept. of Microbiology, Oregon State University, Corvallis, Oregon.

4876. Welch, D. W. 1992. Possible future high seas salmon research by the Pacific Biological Station, p. 37-42. *In* Y. Ishida, K. Nagasawa, D. W. Welch, K. W. Myers, and A. P. Shershnev (eds.) Proc. Intern. Workshop on Future Salmon Research in the North Pacific Ocean. (Spec. Publ. 20, Nat. Res. Inst. Far Seas Fish. Shimizu Jpn.)

4877. Westrheim, S. J., W. H. Barss, E. K. Pikitch, and L. F. Quirollo. 1992. Stock delineation of Dover sole in the California-British Columbia region, based on tagging studies conducted during 1948-1979. North Am. J. Fish. Manage. 12: 172-181.

4878. Whitaker, D. J., and M. L. Kent. 1991. Myxosporean *Kudoa thyrsites*: a cause of soft flesh in farm-reared Atlantic salmon. J. Aquat. Anim. Health 3: 291-294.

4879. Whitaker, D. J., and M. L. Kent. 1992. *Kudoa thyrsites* (Myxosporea) and soft flesh in pen-reared coho salmon. FHS Newsl. 20(1): 4-5.

4880. Donaldson, E. M. 1991. Application of biotechnology to biological problems associated with off-shore mariculture, p. 87-99. *In* G. N. Hirata, K. R. McKinley, and A. W. Fast (eds.) National Science Foundation Workshop on Engineering Research Needs for Off-shore Mariculture Systems, September 26-28, 1991, Honolulu, Hawaii.

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